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CALENDAR

Winter Season 1936

	Winter Jeason, 1930
JAN. 26	Monte Carlo Opera Season opens with Wagner's "Ring."
JAN. 29-FEB. 2	MONTE CARLO MOTOR RALLY.
FEB. 13	Monte Carlo Golf Club—The Windsor Challenge Cup.
FEB. 16	Tennis Competition for the Cup presented by T.S.H. Princess Antoinette and Prince Rainier of Monaco.
FEB. 19	Music—LISZT FESTIVAL, Conducted by George Georgesco.
FEB. 20	Monte Carlo Golf Club—Sporting Club Challenge Cup.
FEB. 21	Classical Concert with Mlle. Erica Morini.
FEB. 22	Monte Carlo Opera—Gala Performance and Charity Ball.
Feb. 24-March 1	MONTE CARLO COUNTRY CLUB—GRAND INTERNATIONAL TENNIS TOURNAMENT.
FEB. 27	Monte Carlo Golf Club-"Rivett-Carnac" Challenge Cup.
MARCH I	Winter Sports—Annual Downhill Race at La Colmiane.
MARCH 4	Berlioz' Requiem, Conducted by Dimitri Mitropoulos.
MARCH 5	Monte Carlo Golf Club—"Walter de Frece" Challenge Cup.
MARCH 6	Music—Gala Concert, Conducted by Richard Strauss.
MARCH 8	Winter Sports-Monte Carlo Ski Club Relay Race at Beuil.
MARCH 19-20	Monte Carlo Golf Club—The President's Challenge Cup.

THE MONTE CARLO MUSIC SEASON continues throughout April, during which month Kreisler will appear on two occasions. The Opera Season runs until the end of March, and amongst other distinguished Singers who will be heard are Lily Pons, Autori and Challapine. The Comedy and Operetta season also continues until the end of March at the Théâtre des Beaux Arts.

INTERNATIONAL DOG SHOW.

CLASSICAL CONCERT, with MME. ELISABETH SCHUMANN.

Monte Carlo Theatre—Opening of the Ballet Season.

GRAND RECITAL by MME. ELISABETH SCHUMANN.

GALA CONCERT, with MME. LOTTE LEHMANN.

(The foregoing is only a brief summary of the more important events up to the beginning of April—the programme for January has already been published in earlier editions of the Calendar.)

TRAVEL ARRANGEMENTS

TRAIN (24 hours) 1st Class Return Fare £19 5s.
Return Sleeper, £9 19s. 2d.
2nd Class Return Fare, £14 os. 2d.
Return Sleeper £8 17s. 1od.
30-day Tickets are available on two days a week at a substantial reduction.

MARCH 25

MARCH 27 MARCH 28

APRIL I

AIR (7 hours) Return Fare (to Mandelieu Aerodrome), £22 1s. SEA (7 days) 1st Class Return Fare (to Marseilles), £22.
2nd Class Return Fare (to Marseilles), £16.

HOTELS-HOTEL DE PARIS.-Full pension terms from 30s. per

HOTEL HERMITAGE.—Full pension terms from £1

per day.

HOTEL METROPOLE.—Full pension terms from £1 per day.

At each of these hotels visitors enjoy the advantage of the "pension tournante," which is an arrangement permitting them to take their meals either at the Café de Paris or the International Sporting Club as an alternative to their Hotel Restaurant. There are other good hotels to suit every purse, where full pension terms can be arranged from 10s. per day. Full particulars from Messrs. Thos. Cook & Son, Ltd., and all travel agencies





FEB. 15.—"VANDYCK" FROM SOUTHAMPTON TO MADEIRA, BARBADOS, TRINIDAD, CRISTOBAL (for Panama), JAMAICA (Kingston), HAVANA, FLORIDA (Miami), BAHAMAS (Nassau), BERMUDA, AZORES (Ponta Delgada).

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SATURDAY, JANUARY 4, 1936.



BRITISH FIGHTING SHIPS IN THE MEDITERRANEAN: H.M.S. "EXMOUTH" AND OTHER DESTROYERS AT EXERCISE.

Replying to a question in the House of Commons recently regarding the presence of the Mediterranean Fleet at Alexandria, Mr. Baldwin explained that intended visits to Italian ports during the autumn cruise were abandoned as inopportune,

and it was decided to confine the cruise to the Eastern Mediterranean. A considerable proportion of the Fleet had to remain at Alexandria, the only port capable of accommodating a large number of ships under winter conditions.



By G. K. CHESTERTON.

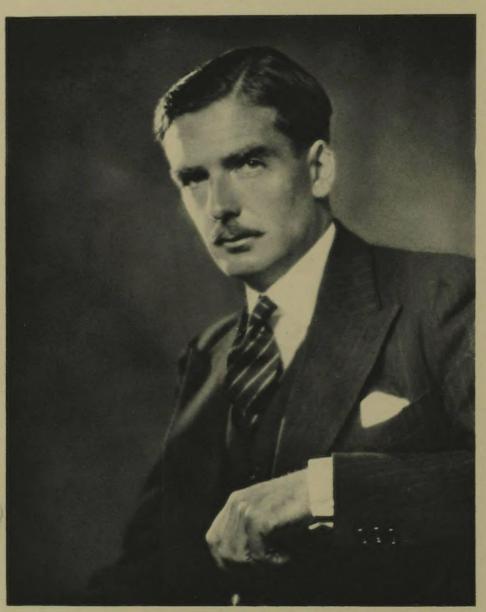
IT seems that the Bolshevist State has been moved to make an attempt to restore the Family; and I only hope that the Capitalist State will be inspired to attempt the same difficult task. For in this, it can be truly said, all we like sheep have gone astray; and very like sheep indeed. Nothing strikes me more about the modern drift from domesticity than the fact that it is really only a drift, and not even a drive; that it consists of people following a fashion rather than a heresy; that is, of each person acting not because he is individually con-

because he is individually convinced, but because he is collectively influenced. The sheep do not follow even a wicked shepherd; the sheep simply follow each other. We know, of course, that there has been a certain parade of originality and ethical defiance in the limited annulus of characteristics. the limited number of sheep who the limited number of sheep who really like showing off. But we have really had very little of the real evil intentions of the wolf in sheep's clothing. What we have had is the pathetic masquerade of the sheep in wolf's clothing. We have seen the sort of suburban seen the sort of suburban intellectual, who dare not fail to catch his train or to keep his job, going off and masquerading in plays and books as a man ready to murder his wife as a protest against marriage, or his mother as a protest against life. We have seen a great deal of the sham wolf; who is quite different from the sham sheep. neither one nor the other has really been able to throw off the oppression of mere modern fashions and fads. Neither one nor the other has gone back to the normal principles or even to the normal problems. Nobody ever doubted that marriage is a problem; from the first records of literature and legend it has been treated as a problem play; only the problem play has been treated as a farce. The fact was so familiar that there was no other way of treating it except as a farce. Most of the modern writers of problem plays have got no further than treating the farce in such a way that it is not even funny. To that extent, merely in reference to the problematic nature of the problem, there has been perhaps a certain amount of liberty, as well as a great deal of licence. A few intellectuals have appeared, if not as the wolf, at least as the Several persons, even eminent persons, have played the goat about the problem. But almost all have been content to be sheep about the solution. They have resem-bled sheep in a hundred woollywitted and wool-gathering ways; but most of all in the fact that they never really thought about the solution at all. Let a very small dog bark behind a very large flock of sheep;

small dog bark behind a very large flock of sheep; and the sheep will know what they are fleeing from; but the sheep will not have, even then, the very vaguest idea of where they are going to.

For, after all, in almost all these current controversies, it is true to say that nobody has really discussed the alternative to the Family. The only obvious alternative is the State. Even supposing that the extreme anarchist school could prevail in a sort of universal riot of promiscuity, the result could only be that the whole new generation of humanity would be thrown on the resources of the only thing which could be considered responsible for them. There was a good deal of cheap and rather unfair sneering against poor Rousseau, who left one of his children on the doorstep of the Foundling Hospital.

It is only fair to Rousseau to say that, if he disowned the child, he did not disown the incident. Many another man, in that pretty immoral society, may have done the same thing; but no other man said so. The one really Christian thing that remained to Rousseau can be found in the very title of his book, which is "Confessions." It is wholesome for a man to ask himself, touching any crime, not only whether he would have the courage to commit it, but whether he would have the courage to confess it, if he did



THE NEW FOREIGN SECRETARY: MR. ANTHONY EDEN, WHO HAS SUCCEEDED SIR SAMUEL HOARE.

Mr. Anthony Eden, who was formerly Minister without Portfolio for League of Nations Affairs, was appointed Foreign Secretary after the resignation of Sir Samuel Hoare. He first entered the House of Commons in 1923, as Member for Warwick and Learnington, and was Parliamentary Private Secretary to Sir Austen Chamberlain, when Foreign Secretary, from 1926 to 1929. In the National Government he became Under-Secretary of State for Foreign Affairs, and in 1934 was made Lord Privy Seal. Last June he was given a seat in the Cabinet. Throughout his political career Mr. Eden has, therefore, been able to study foreign affairs with the closest attention. He is the youngest Foreign Secretary that this country has had for eighty-four years, being thirty-eight years old. Lord Granville held the office in 1851 at the age of thirty-six.

Photograph by Fayer of Vienna, Dorland House.

commit it. But though Rousseau has been made a monster of weakness and wickedness, in excess of his deserts, it is true enough that in one sense he typified in this act the beginning of our slipshod and sentimental morals. He did not do so badly as his worst detractors said; but he did do one really indefensible thing; he founded the modern moral system—or lack of system. In that one act of throwing a baby at an institution, he did make himself a guilty partner with posterity; and assisted the whole march of progress and the movements of men much less humane than himself. He did foreshadow the frightful punishment of mere sex emancipation; which is not anarchy but bureaucracy.

For, given any freedom of that sort, the State does become one vast Foundling Hospital. If

families will not be responsible for their own children, then officials will be responsible for other people's children. The care of all such things will pass into their hands; because there will be nobody else to notice such a trifle as a living soul born alive into the world. The total control of human life will pass to the State; and it will be a very Totalitarian State. I know there are some who maintain that paid officials will be more devoted than parents; but it is very hard to see on what this can be based, unless it is

hard to see on what this can be based, unless it is the pay. Yet there is the whole world, and rather especially the whole modern world, to attest that those who are well paid can be badly bored. Those who imagine that they could not be bored with babies do not know much about babies. We always come back to the unanswerable argument of nature; that there do happen to be one or two persons, who are less bored with one particular very boring baby than everyone else would be. That common sense is the concrete foundation of the family; and no negative reaction against it comes anywhere near to having a positive substitute for it. Those who have a vague idea that educationists could take it in turns, or experts divide the baby between them, are simply people who suppose that there can be twenty officials to one citizen. A baby cannot be divided to any general social satisfaction, as Solomon discovered some time ago; and the person who least desires to see it divided will still be the person most likely to take it on as a whole, and as a whole-time job.

Therefore do I publicly salute the great example of Mr. Stalin, who produced his own mother suddenly from some unknown cupboard in the Communist system; and held her up as a new sort of sacred Icon for the inspiration of the Russian people. Therefore do I note with profound interest the new note of his advice to the Soviet society; that it should restore some solidity to the human family. Why did that capable and apparently cynical Georgian indulge in so remarkable a reversal, or even renunciation? I take it that he did so because he and his flock of sheep had come to the end of the road, down which our own vaguer and more visionary sheep are still stumbling. It would not be the first time that Communists had learned common sense at the expense of Communism. They began by saying that there must be no war; or, if there was, that it must be conducted by electioneering, and soldiers be indistinguishable from their officers. They ended with the raising of a huge Red Army, to fight the White

the raising of a huge Red Army, to fight the White Army; and since then they have restored the distinction of office and rank in that army. They began by saying there must be no private property, and harried and enslaved hundreds or thousands of peasants, in the course of learning that peasants must be allowed to preserve private property. So, by prolonged and extravagant experiment, they have really found out that the family is real; that there is no substitute for it; and certainly no substitute in the vast and vague abstraction of the State. All this is very much to the credit of the Bolshevists; if it is not altogether to the credit of Bolshevism. They, at any rate, have retained one essential mark of being really alive. They, at any rate, have learned by their own mistakes; I wish I were certain that our own industrial civilisation would do the same.

A GREAT SERVANT
OF THE STATE
IN LAW, FINANCE,
DIPLOMACY, AND
ADMINISTRATION:

LORD READING—
A MAN WHO IN HIS TIME
PLAYED MANY PARTS
WITH EQUAL BRILLIANCE.

From the Painting by P. A. de László, M.V.O. (Copyright Reserved.)

BY the death of Lord Reading, which occurred in London on December 30, the nation lost one of its ablest and most distinguished public servants. Rufus Daniel Isaacs was born in London in 1860, second son of Mr. Joseph Michael Isaacs, and nephew of Sir Henry Isaacs, Lord Mayor of London in 1889-90. He went to University College School, and later studied languages in Brussels and Hanover. Then followed an adventure, for, disliking office life, he took to the sea and served for a time as "ship's boy" in a tramp steamer. Returning to London, after a short experience on the Stock Exchange he entered at the Middle Temple. At the Bar he quickly attained success, acquired a large practice, and took part in many causes célèbres, first attaining prominence in the prosecution of Whitaker Wright in 1904. In the same year he entered Parliament as Liberal Member for Reading. In 1910 he became Solicitor-General, and a few months later Attorney-General. In 1913 Sir Rufus Isaacs, as he then was, succeeded Lord Alverstone as Lord Chief Justice, and in January 1914 he was made a Baron. At the outset of the war he did invaluable work in shaping British financial policy. A turning-point in his career was his first mission to the United States (in 1915) to negotiate an American loan. His success and popularity in America were so great that he was entrusted with a second mission in 1917, and in 1918 was appointed High Commissioner and Special Ambassador to the United States, while retaining his post as Lord Chief Justice. He returned to England in 1919 and was thanked by the Government for "the inestimable value" of his services. He had been created Viscount in 1916 and Earl in 1917. As Viceroy of India (1921-26) he combined firm-ness with conciliation, and won universal respect. On his return he was made a Marquess. In 1931 he became Foreign Secretary. He was married twice, and is succeeded by his only son, Viscount Erleigh, K.C., M.C. The above painting is one of three portraits of Viceroys (the others being Lord Hardinge and Lord Minto) executed by Mr. de László for the Government of India and hung in the Viceregal Palace at Delhi.



THE LATE MARQUESS OF READING IN HIS ROBES AS VICEROY OF INDIA:

A PORTRAIT BY P. A. DE LÁSZLÓ, M.V.O.





GERMANY'S NEW NAVAL AIR ARM: SEAPLANES FLYING IN FORMATION BY "STAFFEL" OF NINE

The rearmament of Germany in the air is still believed to be proceeding apace, and we illustrate here machines of the Marine section, which, it may be assumed, is designed more particularly to co-operate with the growing German alrorate carrier will be laid down this year. In explanation of the formations

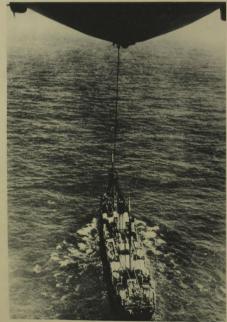




MACHINES AND BY "KETTE" OF THREE, AND A DROGUE TARGET FOR AERIAL MARKSMANSHIP.

shown in our photographs, we may, perhaps, make the following quotation from a most informative article printed in "The Aeroplane": "The German Luftwaffe organisation begins with the 'Kette,' which has three aeroplanes."

and is precisely the same as our Flight. Three Ketten make a 'Staffel, which is commanded by a Capatian . . . , who corresponds to our Squadron Luftwaffe organisation begins with the 'Kette,' which has three aeroplanes.



NEWS PICTURES OF THE MOMENT! SOME OUTSTANDING EVENTS AND PERSONALITIES FROM AT HOME AND ABROAD.

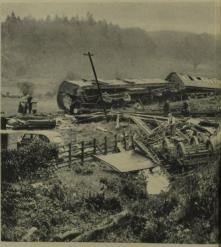


THE GERMAN TRAIN DISASTER ON CHRISTMAS EVE, IN WHICH NEARLY FORTY PEOPLE, WERE KILLED: THE WRECKAGE ON THE BRIDGE OVER THE RIVER SAALE.











THE GERMAN TRAIN DISASTER: SEARCHING FOR BODIES OF VICTIMS IN THE RIVER SALE, INTO WHICH A NUMBER OF PEOPLE WERE HURLED BY THE COLLISION. The RIVES Sale, from which a number of those killed were roovened. The accident occurred outside the station of Organ-Heringen, where the narrow line crosses a bridge. A local train statemed out express the statement of the s











A DISAFFROYS FIRE IN EDIRENCES, IN WHICH THERE WOMEN WERE DILLED:
THE MALE AT THE NEW WAVELEST THEYRANGE OFFICE.

THE WORST fire in Edinburgh for loss of life for besty-few years occurred at the New Waveletters, and the product of the former of the product of t

Masson.

LIFE." DOG'S

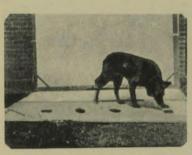
ST VIS

BEING AN APPRECIATION OF

"THE MIND OF THE DOG": By F. J. J. BUYTENDIJK.*

(PUBLISHED BY ALLEN AND UNWIN.)

THE dog has been man's pet and companion for longe THE dog has been man's pet and companion for longer than the span of recorded history. Domesticated greyhounds date back as far as 4000 B.C., as we know from evidence in Egypt, and there is every reason to think that the record might be carried back into præ-history, had we only the means of tracing it. The genealogy of the household dog is still a matter of controversy, and this animal's attachment to man is a complete mystery. Neither Professor Buytendijk nor any other scientist can offer any explanation of it; it is obvious, however, that it is a very powerful association, and—so far as it is permissible to attribute human characteristics to the non-human—an affectionate attachment. Man's attachment to dog is more easy to account for. A dog may be useful, but its usefulness is not the chief reason for the esteem in which it is held. It is, or can be, attractive in appearance; it is of a convenient size; it



TEST OF A DOG'S INTELLIGENCE A TEST OF A DOGS INTELLIGENCE
AND SENSE OF SMELL: A POLICE
DOG PICKING OUT THE PURSE OF
A PREVIOUSLY INDICATED PERSON
FROM AMONG THREE OTHER PURSES;
AFTER HAVING SNIFFED THE PERSON
IN QUESTION AND ALL THE PURSES. Reproductions from "The Mind of the Dog," by Dr. F. J. J. Buytendijk; by Courtesy of the Publishers, Messrs. George Allen and Unwin. venient size; it is easily trained to domestic con-ditions (owing, as Professor Buytendijk holds, to in-herited lair inherited lan in stincts of tidi-ness); it is, as lawyers say, lawyers say, mansuetae naturae; and Dr. Buytendijk and rightly points out that it is, to man's obser vation, the most quadrupeds.
These characteristics make the dog a ready subject for an important in manual control of the contro impulse in man which, in our

view, is essentially egoistical, though the word is not necessarily derogatory. Nearly all human beings desire not only to receive but to give affection in some form or other. There is no Bill Sikes so degraded that he cannot obtain the is no Bill Sikes so degraded that he cannot obtain the devotion of a dog, and the uncritical nature of this loyalty devotion of a dog, and the uncritical nature of this loyalty makes it flattering and comforting. On the other hand, to give affection to a human being is often a perilous business; it may not be returned, or, if it is, it is seldom returned without qualification. Just as affection from a dog is flattering, so affection for a dog is flattering, because it is de haut en bas, and is subject to no cavil. It is based, in other words, on a degree of subjection, or dependence, in the animal which cannot be found in any human beings are contact young children. For this reason, no other animal in the animal which cannot be found in any human beings except young children. For this reason, no other animal receives the same degree of affection, because no other animal is as subject as the dog. The difference is specially noticeable in the case of cats, for the cat never surrenders its independence, and therefore is not so generally beloved as the dog. It is for this reason also that the dog is simultaneously an object of fondness and of contempt. By a curious paradox, the very name of this highly valued animal is, in common speech, a synonym for all that is most abject and degraded in man. To the same psychological cause we trace the fact that many people who either cannot or dare not give affection to human beings can lavish it on dogs and other animals. The dog, charming creature though he is, has

dare not give affection to human beings can lavish it on dogs and other animals. The dog, charming creature though he is, has become in large measure the incarnation of the superiority complex in man.

Professor Buytendijk has a more entertaining theory of the affinity between these two types of mammals. He regards both man and dog as exiles in the midst of nature. Man, "through his mind, which desires to know and will know, no longer forms a part of the natural world. He is no longer a member of one single milicu, but consciously realises his own ego, his loneliness, and thus the things of time and space, the universe, stand outside him and pass him by." The dog has also been wrested from his milicu in the passage of time since "that remote past when a man retained and reared the forsaken wolf-cub." Thus the two exiles are drawn together by their common loneliness. This, we suggest, is the language of fantasy, not of analysis. Man is as much "a part of the natural world" as a beetle. Whatever he may be in his own windy estimation, specie acternitatis, a mere pin-point of life planted on a speck of matter which appears to be of extreme insignificance in relation to the universe.

Whatever may be the cause of the firmly established relationship between man and dog, we are all interested

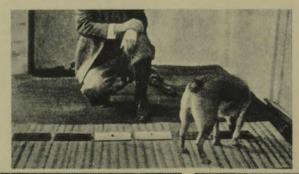
Whatever may be the cause of the firmly established relationship between man and dog, we are all interested in dogs and have all speculated about them. It is an attractive, an almost irresistible, study; but much of our speculation starts from premises which are probably false,

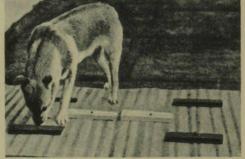
• "The Mind of the Dog." By Dr. F. J. J. Buytendijk, Professor of Physiology in the University of Groningen. Authorised Translation by Lilian A. Clare. Illustrated. (George Allen and Unwin; 8s. 6d.)

and at the best highly uncertain. Our greatest mistake—and we constantly make it with all animals—is to humanize the dog. Dr. Buytendijk repeatedly warns us against this fallacy, though, as it seems to us, he himself frequently succumbs to it. The commonest example of this error is that of reading "expressions" in the faces of animals. It is easy to see, in animal features, "expressions" which are sullen, proud, defiant, fierce, pathetic, comic, and so forth. Thus the faces of monkeys, which are nearest to those of human beings, convey to most observers an impression of sadness or moroseness which excites pity or repulsion. Few people can look a mandril or a gorilla in the eye without an almost physical antipathy. All this, of course, is mere analogy. We tend to see all things in our own image—even the Man in the Moon!—and in all these cases we merely construct fantasy-pictures of human countenances, and then, very often, draw quite unwarrantable conclusions from them in the wholly different

ances, and then, very often, draw quite unwarrantable conclusions from them in the wholly different sphere of our own moral or æsthetic values. All our studies, then, of an attractive and familiar animal like the dog should be prefaced by a caution against our incorrigible anthropomorphism. We do not even know how—in what kind of images—the dog sees the world. Some of Dr. Buytendijk's experiments seem to demonstrate with reasonable certainty that a dog can, after habituation, distinwith reasonable certainty that a dog can, after habituation, distinguish between simple geometrical forms, and recognise them in any position. But it is still uncertain whether a dog can distinguish colours, and whether it sees objects in the same forms as those in which they present themthose in which they present them-

The other senses of the dog are of great interest biologically, and are—more certainly than sight—extremely different from our own. Its hearing is vastly more acute than ours; experiments, cited in this book, have shown that a sound which is not perceptible to an ordinary human being beyond 3 to 4 metres may be heard by a dog at a distance of 24 metres. Thus the dog's world is constantly vibrating with a multitude of sounds quite inaudible to man. But there is an even greater difference—indeed, so great that it is almost beyond the range of







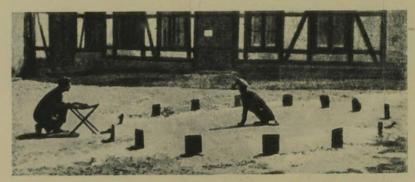
TESTING THE DOG'S ABILITY TO DISTINGUISH COLOURS: THE DOG TAKES THE MEAT

TESTING THE DOG'S ABILITY TO DISTINGUISH COLOURS: THE DOG TAKES THE MEAT FROM THE BLACK SLAB, AS ORDERED BY HIS MASTER (ABOVE); THE DOG MISSES THE GREEN SLAB AND GOES TO THE BLUE (BELOW, LEFT); AND THE DOG TAKES THE MEAT FROM THE RED, AS ORDERED.

Discussing this test in his book, Dr. Buytendijk remarks: "Sarris believes that his dogs do indeed 'understand' the words blue, red, black, green, white, yellow; that is, that upon hearing these words an idea of the colour named surges up and leads to the definite search for it. Wonderful as the training in these six words may be, the assumption that the dog, on hearing them, is imbued with a 'colour-idea' is not correct."

our imagination. The first and most important physioour imagination. The first and most important physiological fact to grasp about the dog is hat it is, above all, a smelling animal. Its olfactory mucous membrane is very much greater than that of man, even in an absolute sense; and, in a proportionate sense, it is so much greater that it is extremely difficult for us to realise the extent of the difference between man and dog in the whole physical presentation of things. A dog's world is peopledwith an enormous and subtly graded variety of smells wholly inodorous to man. This is the chief physical factor in the dog's life. Dr. Buytendijk's experiments have shown that a dog can detect a scent of iodoform in a dilution of one to four million. It is interesting to find, however, that, in connection with the reliability of police dogs, he insists on a serious margin of error in the animal's well-known "tracking" capacities. The reason is that the human being, in making his tracks, carries along with him not only his own distinctive odour (perceptible, to an astonishing degree, to the dog) but also the numerous odours which are picked up from the earth in his passage. This inevitably confuses the animal when there is any mingling of tracks, and it may even be that the "personal" scent becomes, in a long trail, subordinate to the adventitious scents.

Even more interesting than the sense-nature of the dog is the subject raised by the somewhat ambitious title of this little book—" the mind of the dog." Does a dog



TESTING A DOG'S POWER OF LOCATING A SOUND: A DOG SITTING IN A RING OF CARDBOARD SCREENS; THE EXPERIMENTER MECHANICALLY PRODUCING A DRUMMING SOUND FROM BEHIND ANY ONE OF THE CARDBOARD SCREENS AND THE DOG LEARNING TO PICK OUT THE PARTICULAR SCREEN FROM WHICH THE SOUND ORIGINATES.

This experiment proved that a dog is able to fix the direction of a sound with extraordinary accuracy. From sixteen, and even from thirty-two, sources of sound in the circle, the dog learned to locate it without a mistake. When similar tests were made with human beings it was found that there was confusion, even with only sixteen possible sources.

think? Can it reason? Does it act purely by instinct? These are popular speculations. In approaching them, it is necessary to forget for a moment the purely arbitrary (if convenient) distinctions between thought, instinct, reason, reflection, conscious, sub-conscious, and what Dr. Buytendijk calls "vital fantasy," and to remind ourselves of certain perfectly manifest phenomena. All living creatures, in the doing of anything whatever, appear to be actuated by a force which in man we call reason or intelligence, and for which it is extremely difficult to find a name when we are dealing with lower animals. Let us call it the X-force. In higher organisms, we know that it is somehow connected with the brain; we can even, to a limited extent, observe its mechanism; but we do not understand the nature of the motive-force itself any more than we understand the nature of life itself. Now, creatures "live, move and have their being"—in other words, they act, except when they are asleep or otherwise rendered unconscious or deranged. All action implies purpose or intention. By a well-known philosophical analysis, intention is held to contain two elements—(1) foresight of certain consequences, and (2) desire to effect them. Even in the lowest animals, these processes

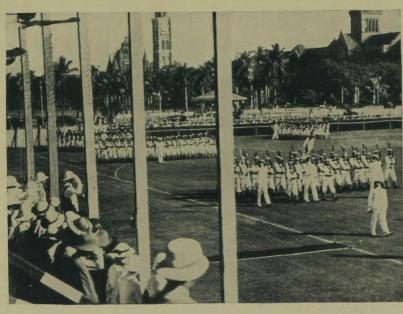
analysis, intention is held to contain two elements—
(1) foresight of certain consequences, and (2) desire to effect them. Even in the lowest animals, these processes cannot take place without some operation, in however small a degree, of the X-force, and it is nothing to the purpose to say that this operates in an "instinctive" or "subconscious" manner. In the present state of our ignorance about the X-force, investigations into the "psychology" of animals can do little more than suggest data about the degree in which they possess the X-force. Experimenters can record interesting phenomena, but up to the present they have led us to few stable conclusions.

the present they have led us to few stable conclusions.

This, we think, is true of Professor Buytendijk's researches. They are patient and interesting, but it must be confessed that they leave us very much where we were before. We do not need scientific analysis to convince us that a dog does not act "purely by instinct," for the smallest attention to the behaviour of a dog will reveal the absurdity of that suggestion. What some people call "reason" in a dog, Dr. Buytendijk prefers to call "insight" (the terminology makes little difference), but as to the exact degree of the dog's insight, or X-force, he cannot say more than that it is "very limited," and that it is "neither so spontaneous nor so durable as we might expect." Probably there is nothing more to be said, nor will there be, until we understand more of the essential nature of mental processes. A good many of the elaborate experiments here recorded establish conclusions which, as it seems to us, could have been equally well established by common observation. Nevertheless, the book is an interesting study, though it is more happy in suggestion than in exposition—perhaps because it is viewed through the veil of translation. It would be more illuminating if the author had not constantly allowed himself to be diverted from a theme by side-issues.

C. K. A.

A WINDOW ON THE WORLD: NEWS ITEMS FROM FAR AND NEAR.



THE GOVERNOR OF BOMBAY PRESENTS THE KING'S COLOUR TO THE ROYAL INDIAN NAVY: HIS EXCELLENCY TAKING THE SALUTE AT THE MARCH-PAST

impressive ceremonial the King's Colour was handed over to the Royal Indian Navy at pay on December 9 by Lord Brabourne, the Governor. About a thousand officers and of various Indian naval units were on parade. They were inspected by Rear-Admiral. F. Bedford, Flag-Officer Commanding. Already the Royal Indian Navy has seven ships, two of them, "Indus" and "Hindustan," being sloops of recent construction.



THE WORLD'S LARGEST TELESCOPE LENS REMOVED FROM THE ANNEALING OVEN AND FOUND TO BE SATISFACTORY: THE 200-INCH DISC.

other stage in the long process of manufacturing a 200-inch lens for a California telescope istrated in these pages at various times) was accomplished at Corning, N.Y., on December 8, en the lens was taken from the annealing oven where it had been cooling for twelve months, was found to be almost flawless, and such flaws as it has will be removed during the grinding.

The grinding is expected to take about five years.



A COLLAPSIBLE GLIDER WHICH, WHEN DEFLATED, CAN BE PACKED IN A SUIT-CASE:

THE MACHINE READY FOR A TEST FLIGHT AT MOSCOW.

Concerning this remarkable aircraft a correspondent sends us the following note: "A glider which can be packed in a suit-case and carried around until needed has been built and successfully tested in Moscow by P. I. Grokhovsky, the famous Soviet inventor. Made of a special rubberised



A NEW FRENCH HELICOPTER WHICH RISES VERTICALLY INTO THE AIR AND HAS TWO SCREWS: A SUCCESSFUL TEST IN PROGRESS AT VILLACOUBLAY.

A new helicopter design, the work of M. Dorand and M. Breguet, has recently been tested with complete success at Villacoublay. The machine has two screws which allow it to rise absolutely vertically from the ground and then act as propelling agents. There are no wings. A flight of over a kilometre was accomplished. The machine weighs about two tons and has a 300-h.p. Hispaño engine. It is expected to revolutionise helicopter design.

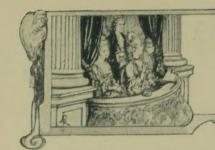


PRECAUTIONS AGAINST THAMES FLOODS: A "PEPPER POT" STRUCTURE CONTAINING INSTRUMENTS WHICH IN EMERGENCY COMMUNICATE WITH THE POLICE,

The high level reached by the Thames in the latter part of December prompted the authorities to take every precaution against a repetition of the floods which proved so disastrous in London in 1928. Here is seen a "pepper pot" structure being set up on Westminster Pier. It contains delicate instruments which record every change in the height and strength of the current, and in emergency communicate automatically with Police Headquarters.



THE GLIDER, DEFLATED, BEING FOLDED UP: A MACHINE WITH A WING SPAN OF THIRTY-ONE FEET WHICH CAN BE CONTAINED IN A SUIT-CASE. aviation fabric called 'Bertel,' the machine weighs only ninety-three pounds and can be inflated in fifteen minutes. It is amphibian and is easily controlled in the air. It is twenty-six feet long, with a wing span of thirty-one feet. When rolled up it can be packed in a suit-case."



The World of the Theatre.

By IVOR BROWN.



GIVING THEM BEANS.

ON the Monday afternoon before Christmas I was at the Embassy Theatre, which was packed with children from one of the poorer districts of London. Whatever happened on the stage they roared with delight. The comedians in "Dick Whittington" had only to move a finger and the cat had only to flick its tail, and the bliss of the entire audience was assured. On the Tuesday night I sat at Drury Lane where an august audience was receiving "Jack and the Beanstalk" with a certain polite condescension. When Mr. Shaun Glenville endeavoured to

however, of traditional pantomime, will wonder what has become of the stilted verse. Mr. Marriot Edgar's libretto has very little of the old, outrageous rhyming, which is always a great pleasure to myself.

Jack at Drury Lane is played in blouse, buckskin, and shining armour by Miss Binnie Hale, who is a natty principal boy, with very pretty movements, and a great charm of manner. Her performance lacks the swashing and the spanking manner; but so do the performances of most principal boys, and that is that. Times change, the jewels dwindle on the finger and the bosom, bosom dwindles too.

troops whom Mrs. Calthrop has robed in scarlet tunics, flashing white breeches, and enormous top-boots of glittering

flashing white breeches, and enormous top-boots of glittering patent leather.

And now for the clowns. Mr. Charles Heslop has been recruited from the historical charades of "1066 and All That," but he seems to find, to quote the song of the season, that "He Can't Do That There 'Ere." On Christmas Eve he appeared to have only the outline of a part and wandered forlorn in search of its contents; I trust that they have been discovered by now, for he is a great droll when he has that wherewith to prove it. Messrs. Wakefield and Nelson exchange words and blows on the simple assumption that the first business of broker's men is to break each other's limbs, and the funniest bone of all is a compound fracture. Arriving by aeronylane they continue

compound fracture. Arriving by aero-plane they continue for hour after hour to curvet, collapse, beat up, trample down, and mutually enchain each other as though pain, like time, were not. Finally, there is Mr Shaun Glenville. Finally, there is Mr. Shaun Glenville, a Dame of very great accomplishment, bringing with him accomplishment, bringing with him the experience of many similar battle-fields. It is good to see him sidle to the front of the stage with the boots, the bonnet the hit



AT THE LYCEUM PANTOMIME: "THE FORTY THIEVES," A TYPICAL AND TRADITIONAL LONDON CHRISTMAS SHOW.

In "The Forty Thieves" at the Lyceum, Kitty Reidy is the principal boy, and Polly Ward, as Morgiana, the principal girl. George Jackley plays Ali Baba; and Florrie Forde is Cogia, "Mrs. Baba." In addition to these, Naughton and Gold intensify the fun, as does Eddie Gray, who takes the part of "Mountsewer." In all, "The Forty Thieves" is the perfect blend of gorgeous spectacle and uproarious joility that the traditional pantomime should be.

In "The Forty Thleves" at the Lyceum, Kitty Reidy is the princ is Cogia, "Mrs. Baba." In addition to these, Naughton and Gold the perfect blend of gorgeous wring community singing from the august, he collected, despite his admirable coaxing, but two or three voices. Were we going to sing, and that publicly, some nonsense about "Moo Maa"? We were not. A stiff-necked, stiff-collared generation, we would not become choristers. Canaries sometimes sing! But not dramatic critics and elegant first-nighters. The song was not, I think, a masterpiece; but we were unchivalgous to the spirit of Christmas. We should have been, in Jack's presence, bean-feasters all.

We were wrong. We sinned against the season. Pantomime asks more of the audience than any other form of theatre. Its conventions are so preposterons that, unless we wholly and heartily agree to accept them, we had better stop outside altogether. Its nonsense is so wild that it will stand no tame commendation of reason. We must be assistants in this annual lark, fellow-conspirators, entranced, absorbed. In other words, we must become as children, and gladly admit that a funny fellow rises in our estimation every time that he falls down upon the stage.

For it was the slap-and-slide business which set the Embassy children rolling and roaring in their seats, despite the fact that the pantomime in question was a refined little affair with no great names, no great chorus, no great transformation-scenes. Every year Miss Margaret Carter writes a simple version of a panto story and the Children's Theatre stage it in the simplest way. But "Dick Whittington" had Idle Jack and a Cat and Fitzwarren with his foot in a bucket. That sufficed. The Children's Theatre is batting, so to speak, on an easy wicket. It has an audience of one age and need not proffer nocturnal offerings to adults.

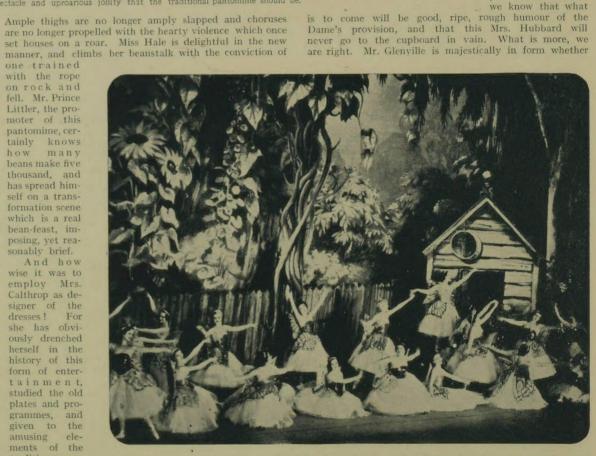
Drury Lane, on the other hand, had to offer almost everything, and, now that it has the right audience, it is doubtless a theatre as happy as it is huge. Irene, the cow, for example, which w

tainly knows how many beans make five thousand, and has spread himself on a trans-formation scene which is a real bean-feast, im-posing, yet rea-sonably brief.

sonably brief.

And how wise it was to employ Mrs.
Calthrop as designer of the dresses! For she has obviously drenched herself in the history of this form of entertain ment, studied the old studied the old plates and programmes, and given to the amusing elements of the ments of the tradition a new and an attractive coat of paint. One

paint. One thing she especially understands is the value of black, which r ay be most graphically expressed in patent leather or American cloth. Also Mr. Ralph Reader is a first-class producer of musical shows, and gives fresh vitality to old forms of dance and parade. There never was a better military turn-out than Mr. Reader's marshalling of the



PANTOMIME AT DRURY LANE: THE BUTTERFLY LK, ONE OF MANY DELIGHTFUL EXHIBITIONS OF JACK AND THE BEANSTALK "--THE BALLET IN FRONT OF THE BEANSTALK,

he is emptying the baby (Mr. Nelson) out with the bath, producing a lather of butter from the churn in order to entangle himself in this sticky tangle, or taking charge of the Giant's kitchen. Glenville, Wakefield, and Nelson miss no opportunity to give each other beans. Of such presentations is pantomime created.

DRURY LANE'S "JACK AND THE BEANSTALK": A TRADITIONAL AND AMUSING PANTOMIME WITH UP-TO-DATE EFFECTS.



IN THE VILLAGE OF EASY GO: THE KING (CLIFFORD HEATHERLEY; LEFT CENTRE) MEETS JACK (BINNIE HALE; RIGHT) AND THANKS HIM FOR SAVING HIS DAUGHTER FROM THE GIANT.



SOME OF THE DELIGHTFUL DANCING IN THE DRURY LANE PANTOMIME: THE FLYING BALLET BEFORE THE BEANSTALK; WITH BABY TERRY AS FAIRY THISTLEDOWN (ABOVE).



IN THE PALACE OF HAPPINESS: BILLY NELSON AND DOUGLAS WAKEFIELD AS THE BAILIFFS; MARJORIE BROWNE AS PRINCESS ANNABEL; BINNIE HALE AS JACK; AND SHAUN GLENVILLE AS MRS. HUBBARD (FRONT ROW; LEFT TO RIGHT).

"Jack and the Beanstalk" is a pantomime in the best Drury Lane manner. The effects are most impressive; the growth of the Beanstalk occurs with great realism, and Jack climbs it in good earnest; while the Giant is an unusually remarkable "property." His huge legs fill the stage; his colossal hand swoops down and envelops the Princess (Marjorie Browne); and his enormous voice seems to fill

the skies. Binnie Hale makes an enchanting principal boy, and again shows herself to be a first-rate actress. The dancing and flying ballets are entrancing; and the chorus work is well up to the high Drury Lane standard. The comedy team is also a strong one. Shaun Glenville is the "Dame"—Mrs. Hubbard; ably aided by Douglas Wakefield, Clifford Heatherley, Billy Nelson, and Charles Heslop.



TRICK CYCLING COMBINED WITH JUGGLERY: THE REMARKABLE ACT OF MAYSY AND BRACH.

CIRCUS THRILLS IN "ARRESTED ACTION" PHOTOGRAPHY: WHIRLS AND WONDERS AT OLYMPIA CAUGHT BY THE CAMERA.



SOMERSAULTING ON A WIRE: A BREATHTAKING MOMENT IN THE PERFORMANCE OF CON COLLEANO.



MY GOODNESS! ELSIE WALLENDA WITH ONE OF HER TROUPE OF PERFORMING SEA-LIONS IN A CLEVER BALANCING TRICK.



N STUDY IN ELEPHANTINE GRACE: FIVE OF THE SIX BABY ELEPHANTS BELONGING TO MR. BERTRAM MILLS, WITH THEIR TRAINER, GINDL, NOTED FOR HIS FEAT IN TRAINING ZEBRAS FOR THE HING.



ONE OF THE WORLD'S FASTEST RIDING ACTS: THREE OF THE EIGHT CORINTHIANS, A TROUPE OF ENGLISH BOYS AND GIRLS.



MORE LIKE RUBBER BALLS THAN HUMAN BEINGS: ASTONISHING ANTICS OF THE ALLISON ACROBATIC ACES, A TROUPE OF TEN, INCLUDING ONE GIRL.

FOR the sixteenth consecutive year, Mr. Bertram Mills has produced his great Circus at Olympia. It is better than ever, and includes a growing proportion of native British talent. The programme contains a "Who is Mino" of the performers written by Ludy Eleaner Sinth and a foreward by Mr. R. B. Cuntinghame-Graham, who proclaims himself a circus-lover from boyhood onward. "Gur thanks are due in the contained of the contained of the history of the world, alone under North-Mark started on the tight rope in the Colissum, and the most circus-loving public in the world ast in their theosands to applicat."



THE YOUNGEST—AND THE ONLY ENGLISH—GIRL LION-TAMER IN THE WORLD: PATRICIA BOURNE, A LANCASHIRE LASS OF TWENTY-TWO, WITH ONE OF HER FORMIDABLE TEAM.



THE BIG THRILL OF THIS SEASON'S CIRCUS AT OLYMPIA: THE FIVE CARLOS IN THEIR AMAZING HIGH-WIRE ACT WITH BICYCLES AND A CHAIR.

PROTOCEARMS SPECIALLY TAKEN FOR "THE LIAUSTRAZED LONDON NEWS" BY WILLIAM DAVIS.

DIVINATION BY "MAGIC" DRUMS.

RARE RELICS OF THE ANCIENT LAPP RELIGION (FINALLY ABOLISHED IN THE 18TH CENTURY) WHICH WERE DESTROYED IN THOUSANDS BY CHRISTIAN MISSIONARIES: TWO EXAMPLES PRESERVED AT CAMBRIDGE.

By Miss E. J. LINDGREN. (See Illustrations, opposite, of drams in the Cambridge University Museum of Archwology and Ethnology; and others on the succeeding page.)

TWO fine specimens of the Lapp divining drum are now in the University Museum of Archæology and Ethnology in Cambridge (Figs 3 to 6). Lapp drums are of great interest, both because of their rarity and because of their specific use for divination, which distinguishes them from all other drums we know.

Little trace remains among the Lapps to-of their old religion (a form of shamanism), and the divining drum, which played an import-ant part in it, is all but forgotten. Högström wrote in 1746 that the drum was used in only a few districts, secretly, and the two in Cam-bridge probably date from the eighteenth century. The Lapp drum has been the object of intensive research in Scandinavia, however, especially under the inspiration of Professor K. B. Wiklund, of the inspiration of Professor K. B. Wiklund, of Uppsala, and between 1907 and 1909 Gustaf Hallström found that a number of oral traditions about the drum and its use still existed in southern Swedish Lapland. He explains their late and unsuspected survival as due to the relative seclusion of that part of the country, with its thickly wooded mountains and high plateaux. Missionaries were active among the Russian Lapps in the sixteenth century, among the Finnish and Norbotten Lapps in the seventeenth, and among the Norwegian Lapps in the eighteenth, but the southern Swedish Lapps were left comparatively untouched; they also escaped left comparatively untouched; they also escaped the fanatical Revivalist movement which spread over Northern Lapland in the nineteenth century. The missions seem to have followed the great trade-routes, and, since travellers have always been attracted chiefly by the North, they have often failed to notice certain relics of the old Lapp culture that can still be detected in the

more inaccessible south-western region.

Lapp drums (called geure in the southern, kabda in the northern dialects) were sometimes kåbda in the northern dialects) were sometimes used exactly like other shaman drums—i.e., to help the performer to attain a trance-like state in which he could exercise supranormal powers (Fig. 2). One tradition tells of an old Lapp and his brother-in-law, both nåites (shamans or diviners), who had quarrelled so bitterly that one of them resorted to sorcery to vent his spite. He went among the other shaman's reindeer and beat his drum to such good effect that the animals became rooted to the spot, and could not be moved until the owner of the herd had lifted the spell by drumming in his turn. There is also an account of drumming over buried treasure

the spell by drumming in his turn. There is also an account of drumming over buried treasure to protect it, and of drumming outside a cave in which an ox was being left as a sacrifice. But the unique characteristic of the Lapp drum lies in its special relation to the art of divining. On the outer surface of the skin there are always signs and figures, reddish-brown in colour, which have been painted with a dye of alder-bark. When the drum was used for divining, an "indicator" (vei'ke—usually triangular, and made of horn, brass, or silver) was placed on the skin, and this jumped when the drum was beaten. According to the meaning of the figures on which the indicator (Fig. 7) fell, the diviner would foretell events such as a wolf's onslaught

such as a wolf's onslaught on the reindeer, and in gen-eral good or evil fortune. Some of the painted signs and figures have been ex-plained by the Lapps them-selves as meaning—God (a selves as meaning—God (a picture of the sun), death (a ring), matrimony (a picture of a man and a woman), a church, a Lapp it, a storehouse-on-a-pole, Lapp on skis, a reindeer a Lapp on skis, a reindeer enclosure or pasture, a wolf, and so on. It would be rash for anyone who has not made a special study of the subject to attempt an interpretation of the signs on the two drums in Cambridge, but it is clear that there are sun-pictures (both with and without rays), a reindeer enclosure, and a ring on the smaller and a ring on the smaller drum (Fig. 6), as well as a drum (Fig. 6), as well as a conical Lapp hut. Professor Agrell has recently discovered important correspondences between the signs on drum paintings and runes, and is about to publish a book on "Rune Magic and Lapp Drums."

Painted drums are also found among other tribes, but Hallström points out that it is these traditional

figures and their use for divina-tion that distinguishes the Lapp drum from other "purely magic" drums, on which figures appear only as shamanistic symbols. The wooden frame or body of the Lapp drum is usually made of birch or some kind of fir, but occasionally of mountain ash. Pine seems to have been used



I. A PAINTING ON A LAPP DRUM, PROBABLY DATING FROM THE SEVENTEENTH CENTURY: AN EPITOME OF THE LAPPS' THOUGHT-SEVENTEENTH CENTURY: AN EPITOME OF THE LAPPS' THOUGHT-WORLD, WITH FIGURES FROM THEIR MYTHOLOGY AND DAILY LIFE At the top of the above painting (faithfully copied from the original) is a symbol representing Radien-Attie, "the Ruling Father" or "the Almighty One." In the centre is Peive, the Sun, with mythological figures on the four rays. Below the sunsymbol is a reindeer enclosure. Other figures represent reindeer in the mountains, bears and wolves, Lapps hunting with bow and arrow or driving a reindeer-drawn akja (sledge), a village, and female guardian spirits (elfshot and akkorna).

Illustrations on this page from a forthcoming book by Herr Ernst Manker, Ethnogeaphical Department, National Museum, Stockholm. Reproduced by the Author's Permission.



THE STATE OF ECSTASY INDUCED IN PP DRAWING: (LEFT) A WIZARD BEATIN OF ECSTASY INDUCED IN A LAPP DRUMMER REPRESENTED IN A SEVENTEENTH-CENTURY (LEFT) A WIZARD BEATING HIS DRUM; (RIGHT) THE SAME WIZARD LYING IN A TRANCE IN THE CLUTCHES OF TWO DEMONS.

This drawing comes from a seventeenth-century manuscript by a Lapp priest named Samuel Rheen. It shows a Nàid (a Lapp wizard or Shaman) beating his drum and thereafter lying entranced and seized by demons. It has been pointed out that the drummer's hammer is incorrectly drawn.

for both the Cambridge drums and the very knotty grain of the wood in the larger one (Figs. 3 and 4) recalls the tradition that pathological excrescences on fir or birch trees are the most suitable material for drums. The skin covering is generally described as reindeer hide, tanned or untanned, but always with the hair removed; it is sewn on to the frame with sinew thread. The shape

tanned or untanned, but always with the hair removed; it is sewn on to the frame with sinew thread. The shape of the drum is usually oval.

Two main types of Lapp drums have been distinguished, which Hallström calls the "sieve-type" (Figs. 9 and 15) and the "bowl-type" (Figs. 3 to 6, and 13—14). In the "sieve-type" the skin is stretched on a wooden hoop, to which a longitudinal piece of wood is attached at the back as a handle. This type is closely allied to drums found in Northern Russia and Siberia, and has a wide distribution in Lapland. The other type has a bowl-shaped foundation made of a single piece of wood, the skin being stretched over the top of wood, the skin being stretched over the top like a lid. Two slits in the base of the bowl furnish a grip (Figs. 3 and 5). Both the specimens in Cambridge belong to this "bowl-type," which is limited to a smaller area and has no obvious parallele.

furnish a grip (Figs. 3 and 5). Both the specimens in Cambridge belong to this "bowl-type," which is limited to a smaller area and has no obvious parallels.

The two types of drums also differ with regard to the paintings: in the "sieve-type" these are always in one field and surrounded by a border, on which stand figures "pointed" towards a central rhomboidal sun. In the "bowl-type," on the other hand, the paintings are always divided into two or more fields, primarily by a transverse straight line; there is no border, and the sun is less central, usually round and without rays. Mixed types occur, and, indeed, a central rhomboidal sun and a sun with rays—"sieve-type" characteristics—can be noted on the Cambridge "bowl-type" drums (See Fig. 6). But while intermediate types are considered by some to be transitional, the origin of the "bowl-type" drum is "never large," according to Hallström, but the two drums in Cambridge differ considerably in size, the larger (Figs. 3 and 4) measuring 16 in. (41 cm.) by 12½ in. (31'5 cm.), the smaller (Figs. 5 and 6) 9½ in. (25 cm.) by 8½ in. (20'5 cm.). Both of them have the supplementary holes in the bowl which are often described, and are thought to add to the resonance. The underside of the smaller drum is covered with carvings, which are usually present on "bowl-type" drums. On the larger of the two Cambridge drums they are lacking, but the wood, especially around the grip, is well polished by use, and a crack was repaired with sinew thread long ago.

Lapp drumsticks, because of their specific shape, are generally referred to as "hammers" (the Lapp name is vetjer or staura, which also means stick, stake). Hammers were always made of reindeer antler, and the fine specimen which belongs to the larger drum in Cambridge is of a typical shape (Figs. 5 and 6) are 6 in. (15'2 cm.)—with the socket, which has been broken off—and 2½ in. (6'3 cm.). Mr. L. C. G. Clarke has identified it as a hammer belonging to the smaller drum. There is some carving on the T-piece of the larger hamm

Lapp drums were usually kept in bags, one of which has been described as made of reindeer skin tanned like chamois; while a bag for the hammer and indicators was made of loon-skin. The was made of loon-skin. The drum was always warmed at the fire before being used, in order that the skin should be quite taut. Fortunately, an old Lapp has given us an account of how to drum; one must sit on one's heels, with knees touching the ground, take the drum in the left hand, resting the elbow on the artery inside the left thigh, and then drum with the right hand, swaying the body to and fro.

body to and fro.

There was a special ceremony when a drum was used for the first time. The whole encampment sat in a circle round the drum. One of the Lapps would then take the most distinguished place, remove his cap, warm the the most distinguished place, remove his cap, warm the drum, and then, leaning forward, beat it with the flat side of the hammer (in divining, the Lapps always beat with one of the hammer-heads). Mumbling to himself, the performer would knock the drum against various objects, and finally place an indicator on it and divine. When Lapps were on the trail, they placed a drum in the last sledge, so that nothing unclean should cross the track that the drum had travelled.

LAPP DIVINING DRUMS OF "BOWL" TYPE: SPECIMENS AT CAMBRIDGE.

By Courtesy of the Curator of the Cambridge University Museum of Archæology and Ethnology. (See Article on Opposite Page.)



FIG. 3. THE UNDER-SIDE OF THE LARGER OF TWO LAPP DIVINING DRUMS IN THE UNIVERSITY MUSEUM OF ARCHÆOLOGY AND ETHNOLOGY AT CAMBRIDGE: (BELOW) THE T-SHAPED HAMMER.



FIG. 5. COVERED WITH CARVINGS, USUALLY PRESENT IN "BOWL" TYPE LAPP DRUMS, BUT LACKING IN THAT SEEN IN FIGS. 3 AND 4: THE UNDER-SIDE OF THE SMALLER CAMBRIDGE DRUM, WITH HAMMER BELOW.

The above photographs illustrate the two Lapp divining drums described in Miss E. J. Lindgren's article opposite. They are at present in the University Museum of Archæology and Ethnology at Cambridge, to which they have been lent by Trinity College, and both probably date from the eighteenth century. As Miss Lindgren explains, there are two distinct kinds of Lapp drum—the "sieve" (or "frame") type and the "bowl" type, to which these Cambridge examples belong. In the former the paintings are in one field, surrounded by a border,

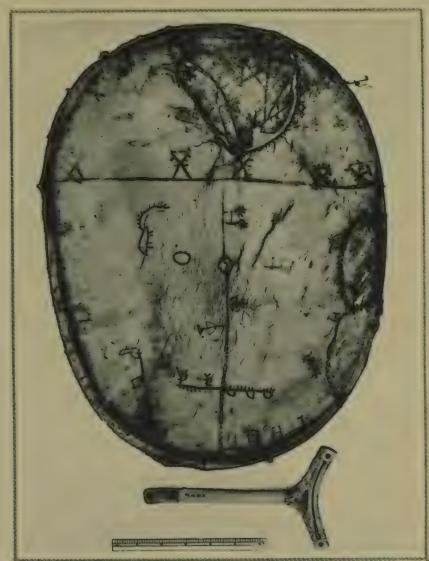


FIG. 4. SHOWING TRANSVERSE LINES CHARACTERISTIC OF THE "BOWL"
TYPE OF LAPP DRUMS: THE MEMBRANE OVER THE TOP OF THE DRUM
WHOSE UNDER-SIDE APPEARS IN FIG. 3.

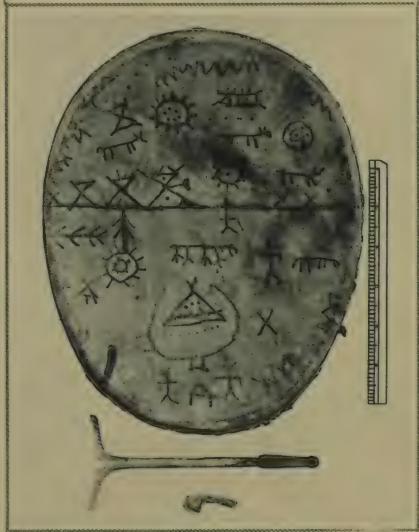


FIG. 6. INCLUDING SUNS WITH AND WITHOUT RAYS AMONG THE SYMBOLS AND FIGURES REPRESENTED: THE TOP, OR MEMBRANE, OF THE LAPP "BOWL" DRUM SHOWN IN FIG. 5—WITH ITS HAMMER (SEEN BELOW).

with symbols pointed towards a central sun; whereas in the "bowl" type they are divided into two or more fields by transverse lines, and the sun is usually ray-less. Mixed types, however, occur, as in these specimens. The symbols were used for divination by means of some loose object, called an "indicator," which was laid on top, and jumped about as the drum was beaten. The symbol on which it fell decided the prophecy. The larger of the Cambridge drums measures $16\frac{1}{8}$ in. by $12\frac{5}{8}$ in., and the smaller, $9\frac{3}{8}$ in. by $8\frac{1}{8}$ in.

LAPP RITUAL DRUMS FOR DIVINATION OR PRODUCING A STATE OF ECSTASY.



7. A LAPP DRUM, WITH HAMMER (BELOW) AND "INDICATOR"—HERE A BUNCH OF RINGS—LAID ON IT TO GIVE DIVINATION FROM SYMBOLS ON TO WHICH IT MOVED.

IO. THE FRONT OF A LAPP DRUM (WHOSE BACK APPEARS IN FIG. 8) WITH ITS SYMBOLIC

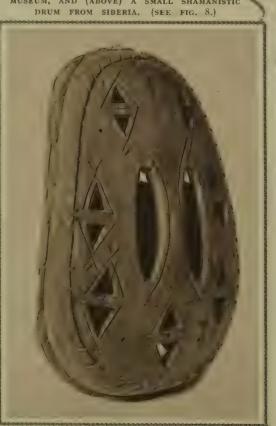
A GIFT TO THE BRITISH MUSEUM
A. W. FRANKS IN 1869.



8. THE BACKS OF FOUR SHAMANISTIC DRUMS
FROM LAPLAND AND SIBERIA (NOW IN THE BRITISH MUSEUM), WHOSE FRONTS ARE SEEN IN FIGS. 10,
11, AND 12.



II. THE FRONTS OF A LAPP DRUM, WITH SYMBOLIC PAINTINGS, NOW IN THE BRITISH MUSEUM, AND (ABOVE) A SMALL SHAMANISTIC DRUM FROM SIBERIA. (SEE FIG. 8.)



14. THE BACK (OR UNDER-SIDE) OF A LAPP DRUM OF THE "BOWL" TYPE MADE OF WOOD FINELY CARVED IN AN OPEN-WORK DESIGN.

PROPHETIC AUGURIES FROM SYMBOLS PAINTED ON THE DRUM MEMBRANE.



9. THE BACK OF A LAPP DRUM OF THE TYPE IN WHICH THE MEMBRANE WAS STRETCHED OVER AN OVAL WOODEN FRAME (GENERALLY BENT TO MAKE THE ENDS MEET).



12. THE FRONT SIDE OF A DRUM (WHOSE BACK IS SEEN IN FIG. 8) USED BY THE LAPPS IN MAGIC CEREMONIES, WITH A STICK OF REINDEER HORN. (NOW IN THE BRITISH MUSEUM.)



15. THE MEMBRANE OF A LAPP FRAME-DRUM WITH MYTHOLOGICAL SYMBOLS, INCLUDING THE ALMIGHTY ONE (AT THE TOP), AND THE SUN SYMBOL (CENTRE), AS IN FIG. I.

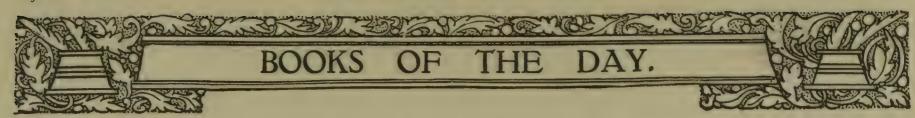
Herr Ernst Manker, of the Riksmuseum, Stockholm, in whose forthcoming book on the subject some of the photographs we reproduce will appear, writes: "The so-called magic drums (Swedish trolltrumma) were instruments used by Lapp wizards or Shamans (Lapp naid) for divination, or for producing a state of ecstasy (Fig. 2). The membrane is of reindeer-hide ornamented with figures coloured with a stain made from chewed alder-bark, and representing in numerous combinations and variations—no two drums are exactly alike—the whole thought-world of the Lapps

13. THE DAMAGED MEMBRANE (MADE OF REINDEER-HIDE AND COVERED WITH SYMBOLS) OF A LAPP MAGICAL DRUM OF THE "BOWL" TYPE, CHIEFLY

FOUND IN CENTRAL LAPLAND

(Fig. 1). When the drum was being used, an 'indicator' moved about on the vibrating membrane, and after the wizard had worked himself into ecstasy he interpreted the will of the gods by the movement of the indicator among the figures and signs. Almost every head of a Lapp family owned a drum. Christian missionaries waged ruthless war against these instruments, and the Lapps were forced to hand them over to the clergy, who immediately destroyed them. It was not, 'however, until the eighteenth century that they were officially abolished."

FIGS. 7, 9, 13, 14, AND 15 BY COURTESY OF HER ERNST MANKER, RIKSMUSEUM, STOCKHOLM. FIGS. 8, 10, 11, AND 12 BY COURTESY OF THE TRUSTEES OF THE BRITISH MUSEUM. (SEE ARTICLE ON PAGE 14.)



TIME and the hour have set me pondering what should be a reviewer's good resolutions in the first week of a New Year. Following the precept of Matthew Arnold, I take it, he should set himself in his leisure moments (if I take it, he should set himself in his leisure moments (if any) to "get to know, by reading, observing, and thinking," the best that has been thought and said in the world, thus acquiring a sound standard of values whereby to judge new writings. Naturally he will continue to abstain from nepotism, jobbery, "the puff collusive," log-rolling, petticoat influence, and all manner of sycophancy. Furthermore, and above all, he must sternly resolve to "read, mark, learn, and inwardly digest" every word of the six or a dozen books (each running, more or less, to a hundred thousand words) which fall to his weekly lot. That, I think, will be enough to go on with. Let us not be too exacting, for we all know what constitutes the road-surface traditionally associated with a certain tropical climate. tropical climate.

I have just learnt, to my great relief, that a good resolution is an excellent thing in itself, even if never put into practice. My authority for this comforting doctrine is the famous Czechoslovak dramatist who originated the robot, a creature without resolutions, good or bad. The book to which I am now referring is a delightful little volume of essays, somewhat in the Elian vein but rather more colloquial, called "INTIMATE THINGS." By Karel Capek. Translated by Dora Round (George Allen and Unwin; 5s.). Here the author shows himself a kindly critic of humanity and its foibles, a lover of nature and animals — especially dogs, cats, and birds—and a genial humorist ranging over all sorts of topics, from books and maps to barrel-organs and railway stations, interspersed with reminiscences of his own boyhood.

Reverting to my initial subject, how fortifying I find it to read: "The essence and significance of a good resolution is not to be carried out, but simply to be had. If in my Hour of Good Resolutions there arises in me an honourable and heroic determination to honourable and heroic determination to get up earlier from to-morrow onwards, it is a demonstration of the great and liberating fact that I can get up earlier. . . While a man cherishes the heroic idea that he is going to begin getting up earlier in the mornings, he preserves in himself the wonderful possibility that he may begin to live anew, may see the sunrise or the glorious rise of himself. As long as he believes that he will do physical jerks in the mornings, he leaves open the possibility that he will become as beautiful as an Olympic victor. . . . Good resolutions are an untamed manifestation of a free will."

In his first essay M. Capek contrasts the city boy, "a born sceptic, lord of the streets," with the country boy, who "is lord of the fields and forests...

the streets," with the country boy, who "is lord of the fields and forests . . . knows all about horses, and is on friendly terms with the beasts of the field."
London, of course, contains thousands of children who have never left their native streets. The reactions of such children to unfamiliar rural surroundings are vividly presented in "LITTLE FLOWERS OF ST. PANCRAS." By Hugh Talbot. Illustrated by John Reynolds (Dent; 5s.). The scene opens with a dialogue between a country schoolmaster and his wife, who tells him: "I want to have fifteen or sixteen slum children here for a fortnight at the beginning of August." So they came—a rampageous gang of little Cockneys of both sexes—and then follows the story of that hectic fortnight, told with stark realism and no sentimentality. The individual characters of these London urchins are sharply etched, and their rich Cockney speech pervades the book. At one time the much-harassed schoolmaster felt that the only cure was drastic State repression of population and dynamite for slum areas. Yet the house seemed empty when the guests had gone.

On the sporting side of country life, a book which, I feel sure, will have a big vogue among the foxhunting fraternity, is a handsome quarto entitled "A GENTLEMAN AND HIS HOUNDS." By "Sabretache," author of "Shires and Provinces" and "More Shires and Provinces." With eighteen Portraits (Eyre and Spottiswoode; 25s.). This volume is not, as the title might suggest, a memoir of one particular Master of Hounds, but a general study of personalities and conditions in the foxhunting world of to-day, in which, I should imagine, every notable M.F.H. finds mention, including several distinguished Americans who have settled in the mother-land. The book is brimful of enthusiasm and packed with information, revealing wide

knowledge of the sport in all parts of the country. The author takes up the cudgels strongly for "the most democratic of all sports" against prejudice and class hatred and in behalf of freedom. "We are not yet dragooned," he writes, "into backing only such pleasures as a possibly misguided Petit Caporal considers good for us... No one but an M.F.H. knows an M.F.H.'s anxieties or one half of the hard work he does to give the many thousands of people who come and hunt with him between November and April some of the best air and exercise which mortal man can hope to enjoy."

"Sabretache" does not confine himself to England, but devotes chapters also to Scottish and Irish hunting. Nor is it only in the chase itself that he is interested; he has

a feeling, too, for romantic traditions. Thus:

THE CHRISTMAS CRIB IN ST. PAUL'S: A GROUP WITH AN OVERHANGING CANOPY, CARRIED OUT ENTIRELY IN WHITE.

For the first time a Christmas Crib was erected in St. Paul's, immediately inside the west doorway, and was exposed to view on Christmas Day. In general design it follows the tradition of the crib first erected at Assisi by St. Francis in 1223, but is peculiar in being carried out entirely in white. It shows the Holy Child, with the Blessed Virgin and St. Joseph, and the adoring Magi and shepherds.

over the Eildons in the Buccleuch country is enough to make you believe that you may have had 'Auld Wat of Harden' clinking stirrup-irons with you as you jump one of their walls, or their 'flake' gates, or that Michael Scott the magician and his pet devil are looking at you from the Cheviots, or maybe 'Thomas the Rhymer'—Thomas of Erceldoun, who still bides in the Eildons with the Faerie Queen—may be taking a 'keek' at you." Legend seems to be a very real thing in Scotland. When I was walking with a friend along a country road, not far from Edinburgh, we came upon a wayside notice-board, stating that "Near this spot Thomas the Rhymer met the Faerie Queen"—not, mark you! "is believed" to have met, but actually did so.

There is one controversial aspect of hound-breeding which "Sabretache" avoids. "I have not the slightest intention," he says, "of putting my head into a hornet's nest by expressing any opinion one way or the other about a Welsh infusion." No hornets, however, have deterred the author of "The Modern Foxhound." By C. R. Acton. With Foreword by Earl Bathurst, and fifteen Illustrations (Witherby; 7s. 6d.). Lord Bathurst, who

commends the book to Masters of Hounds as "worth the most careful study," writes: "This new fashion requires that Foxhounds must have a dash of Welsh blood, owing to the big pure-bred English Foxhounds being now said to be useless, as they cannot go the pace demanded by the modern Speed Mania. . . . What a relief from all this nonsense it is to take up and read Mr. Acton's book." Personally, being unversed in these high matters, I preserve neutrality on the Welsh question. I am more amused to learn, from Mr. Acton's chapter on the Personality of the Foxhound, that, when detached occasionally from the communal spirit of the pack, it displays the lovable characteristics of the ordinary dog, and has even been known to "sit up and beg" or "shake a paw." Does anyone ever keep a foxhound as a private pet, or is that contrary to the laws of the Medes and Persians?

Lastly, I would commend to serious students of public affairs in Europe a couple of significant biographies portraying two leading men of our time, poles apart in personal character and political tendency. The first is an authoritative work by a writer of European repute—"Albert of Belgium." Defender of Right. By Emile Cammaerts, With Sixteen pages of Illustrations and four Maps (Ivor Nicholson and Watson; 21s.). Here we have a worthy memorial to one of the greatest of modern rulers, a book at once full, well-balanced, and, by a judicious admixture of lighter anecdote and incident, throughout eminently readable. It is, in fact, a book that will rank with the standard works bearing on the Great War and its aftermath.

The world is accustomed to eulogies of King Albert, but no one can read this memoir without realising that they are abundantly justified. Among the tributes which his tragic death evoked the most impressive perhaps came from former foes, through the pages of the Berliner Tageblatt. After recalling his courage in the war, the writer continues: "Thus he returned to his capital, a man of duty, scorning declamation, with a deep feeling for what made his people happy, peace, order and justice. . . The death of King Albert is a loss to the whole of Europe. In international affairs he worked everywhere, and more particularly in Paris, for the restoration of peace. At this critical moment in the struggle for a European order, Europe loses the hand of a guide, Albert the Good." M. Cammaerts himself describes him as "the most human King that ever lived."

This quiet, shy, and unobtrusive monarch, who hated display or ceremonial, and loved to escape from his kinghood and follow his bent as an ordinary citizen, was the direct antithesis of the flamboyant personality portrayed in "Gabriele D'Annunzio." The Warrior Bard. By Gerald Griffin. With sixteen Illustrations (Long; 18s.). The difference between the two is accentuated by their possessing certain qualities in common, such as courage, patriotism, and generosity. Another point of contact was the experience of leading their respective nations into war, for Mr. Griffin has made very clear the fact that it was D'Annunzio's fiery oratory which brought in Italy on the side of the Allies. The author also shows that in many respects (as in the Fiume adventure, he might have "stolen his thunder" by marching on Rome. The whole story of their relations is full of interest, culminating in D'Annunzio's benediction on the Abyssinian campaign.

Full justice is done both to D'Annunzio's warlike

Full justice is done both to D'Annunzio's warlike prowess and to his poetry, but the author writes in no spirit of hero-worship, and roundly castigates any less admirable phases of the poet's character, particularly in regard to his various love - affairs. It is a commonplace, however, that a prodigal career makes livelier reading than that of a saint. One of D'Annunzio's tastes that will appeal to our sporting world is his love of dogs, especially grey-hounds. In a chapter thereon is an account of his visit to Altear for the Waterloo Cup, when he commented on "the proud mien of the English gentlemen farmers, looking like Assyrian archers." He even projected a book on "The Lives of Illustrious Dogs," but the war came and it never took shape. We leave "the protagonist of the modern Latin Renaissance" in the seclusion of his famous domain at Vittoriale. His biographer has effectively told the amazing story of an amazing man.

C. E. B.



WHEN 71 TONS OF BOMBS WERE DROPPED ON DESSIE: AN HISTORIC PHOTOGRAPH OF THE AERIAL BOMBARDMENT, TAKEN FROM A RAIDING 'PLANE.

This wonderful photograph was taken during the air raid on Dessile on December 6. It shows (centre) the white-roofed royal palace, which was hit a little later; a trail of exploding bombs (across the middle); and (lower left) what the sender of the photograph describes as the explosion of the powder factory or munition dump. The picture was taken from one of the eighteen Italian machines concerned in the raid. Further photographs of the damage done to Dessie are given overleaf.

AIR RAIDS ON ABYSSINIA: DESSIE DAMAGE AND DAGGAH BUR CASUALTIES.



THE EMPEROR OF ABYSSINIA AND PRINCE MAKONNEN, HIS SON, INSPECTING DAMAGE DONE AT DESSIE BY THE ITALIAN AIR RAID: A BOMB CRATER IN THE TOWN.



A FRAGMENT OF AN INCENDIARY BOMB EXPLODING OUTSIDE THE TAFARI MAKONNEN HOSPITAL AT DESSIE.



WOUNDED ABYSSINIANS ON STRETCHERS AT DAGGAH BUR, ON THE SOUTHERN FRONT, AFTER AIR RAIDS ON THE VILLAGE: ONE OF THE LAST PHOTOGRAPHS TAKEN BY DR. HOCKMAN.

In recent weeks the Italians have exploited to the full their possession of aircraft, partly by raids on Abyssinian towns and villages on both fronts, partly by locating and bombing enemy troop concentrations, and partly by intervening in actual engagements. When the Emperor was at Dessie on December 6, the opportunity was taken of raiding the town with eighteen aeroplanes and 7½ tons of explosive and incendiary bombs. A wonderful photograph of this raid is given on a double-page elsewhere in this issue. Here are shown some of its effects, as well as a photograph taken at Daggah Bur, in the south, by the late Dr. Robert Hockman.

Daggah Bur was subjected to heavy bombardment on several successive days, but there, although the village was practically destroyed, no lives were lost. At Dessie fifty-three were killed. Both bombardments have been more fully described by us in earlier issues. Heavy fighting took place in Shire and Tembien (to the southwest of Aksum and west of Makale) towards the end of December, the Abyssinians counter-attacking on the Italian right flank. On several occasions there were fierce hand-to-hand engagements, and once at least the Italian aeroplanes were unable to use their bombs and machine-guns on the enemy for fear of hitting their own men.

BOUGHT FOR £3 AND SOLD FOR £2940: THE ROMANCE OF A FRANS HALS.

REPRODUCED BY COURTESY OF MESSRS. CHRISTIE, MANSON AND WOODS, AND MESSRS. SPINK AND SON.



"TWO FISHER-BOYS"; BY FRANS HALS: A MASTERPIECE, KNOWN UNTIL RECENTLY MERELY AS "AN OIL PAINTING IN HEAVY MOULDED GILT FRAME," SOLD BY AUCTION AT A PROFIT OF NEARLY 100,000 PER CENT.

At a recent sale on the South Coast a discerning dealer was attracted by the picture reproduced here, and bought it for £3. He took it to Christie's, where his belief that he had made an important "find" was confirmed by Sir Alec Martin, Christie's picture expert, who, after examination, catalogued it as the work of Frans Hals. Sir Alec recognised it as being akin in style to one in the National Gallery at Dublin, of which he is a Trustee. The picture, a canvas 27½ inches square, came up for sale on December 20. The bidding opened at 300 guineas and Messrs. Spink and Son eventually secured it at a cost of 2800 guineas. Few artists' work has appreciated so much during the present century as that of Frans Hals, who stands with Rembrandt as one of the two greatest masters of the seventeenth-century Dutch school. Hals received little recognition in his lifetime and died in poverty. As a contrast, a portrait by him was sold in 1919 for £26,775. He was born in Antwerp in 1580 or 1581 and died at Haarlem in 1666. Some of his finest work was done in old age, when he was over eighty. In "An Introduction to Dutch Art," Mr. R. H. Wilenski writes of him: "He had an uncanny power of realising the character of an actual atmosphere and the character of the sitter before him; and his records of externals are therefore records of atmosphere and character as well. . . Hals, in a word, was a superb technician and a great transitional figure between pageant art and descriptive naturalism, and he escaped the pitfalls that beset the painters of both schools; he stands as the great Dutch painter of actuality between Rembrandt the great Dutch romantic and Vermeer the Dutch master of architectural style."

ELECTRICITY — ONE OF THE MOST STUPENDOUS DISCOVERIES.

IV.—OUR ELECTRICAL SUPPLY.

By PROFESSOR W. L. BRAGG, O.B.E., M.A. Sc.D., F.R.S., Longworthy Professor of Physics in the Victoria University of Manchester.

(See Illustrations on the Opposite Page.)

Here follows the fourth article in Professor Bragg's series of six based on his lectures on electricity delivered at the Royal Institution. The first three appeared, respectively, in our issues of Dec. 14, 21, and 28. The others will appear in later numbers. They have all been illustrated by drawings specially made for us, under the author's supervision, by Mr. G. H. Davis.

THE third article of this series illustrated the way in which a dynamo works. Faraday's discovery of induction just over one hundred years ago made it possible induction just over one hundred years ago made it possible to use mechanical power in order to create an electrical current around a conducting circuit. Power-stations like that recently erected at Battersea contain vast dynamos. The current flows out through underground cables or wires strung on pylons to distributing sub-stations, from

wires strung on pylons to distributing sub-stations, from which it is sent to surrounding towns and villages and finally to factories and houses. We have often seen in a workshop an engine driving an overhead shaft by means of a moving belt, and further belts coming down from the shaft to the lathes and other machinery. In the case of the electrical supply, the electric current coursing round each circuit is like a moving belt taking power from one place to another. Now that the "Grid" system has been developed in our country, we may say that Britain is covered by several vast overhead shafts, which all the power-stations help to drive, and from which we draw the power which we require.

The first illustration shows one of the turbo-generators at Battersea. Steam

The first illustration shows one of the turbo-generators at Battersea. Steam is raised in coal-fired boilers, and passes into turbines. These turbines have blades set at an angle like the blades on an iron windmill, and they are blown round by the steam just as the wind drives the windmill. The dynamo shaft is linked to that of the turbine and is driven by it.

A very striking feature of a turbo-

dynamo shaft is linked to that of the turbine and is driven by it.

A very striking feature of a turbogenerator is the relatively small size of a unit which represents an enormous horse-power. When Battersea is fully developed it will have an output of 480,000 kilowatts, a kilowatt being about a horse-power. A few machines like that which you see in the illustration are doing the work of half-amillion horses day and night, or, if we allowed a reasonable working day and some time at grass to these noble animals, we may reckon that it would take two million horses to provide us with the equivalent amount of power. Figures like these give us some idea of what has been gained by substituting machinery for muscular energy. The "unit" for which we pay in our quarterly bills represents one kilowatt supplied to us for an hour. An electric fire requires three of four horse-power. Though we sometimes grumble at the cost, it does not seem extravagant when we realise how much energy we are buying. The station at Barking, developing 300,000 kilowatts, uses about 1100 tons of coal a day.

The load upon these power-stations

station at Barking, developing 300,000 kilowatts, uses about 1100 tons of coal a day.

The load upon these power-stations varies greatly at different times of the day and of the year. The illustration shows two graphs representing the power supplied by Barton station at Manchester. The upper one is the load on a typical summer day. In the early hours of the morning it is small, being required only for street lighting, trams, and such machinery as runs all night. When the factories start about 6 a.m. it leaps up, and stays up while they work during the morning. At twelve o'clock the hooters sound, and much machinery is shut down while the workers have their lunch. There is a sharp drop, followed by a rather slower rise at one o'clock when people reluctantly return to work. About six o'clock they are going home, and the demand is low till at ten o'clock the sun sets and there is a little peak representing street and home lighting. Then everyone goes to bed. The curve for a winter's day is much the same, except that it gets dark about four o'clock, and you will see the big jump in the curve as factories, shops, streets, and houses are lit up. The lighting load remains heavy till bed-time.

The dotted lines in the illustration show how the gener-

till bed-time.

The dotted lines in the illustration show how the general state of the state of ators are switched on and off in the power-station in order to cope with the load. The big power-stations are now linked to the Grid. If they develop more power than can be disposed of locally, they "sell" it to the grid by pouring energy into the vast network of cables. If they

have a heavier local demand than they can meet, they "buy" from the grid by drawing extra power. The grid, controlled by the Central Electricity Board, is like a vast National Bank for Electricity.

Often when we buy electrical apparatus, such as a vacuum cleaner or refrigerator, we are asked whether our local supply is "Direct" or "Alternating." A direct current runs continuously in one sense like a river, whereas an alternating current rushes backwards and forwards in the conducting wire like the tides in an estuary. At the lectures, I illustrated the difference by drawing, with rods connected to the electrical mains, upon a cloth soaked with potassium iodide and starch lying upon a metal sheet. Using direct current, and touching the metal sheet with the negative rod, a beautiful violet line can be drawn with the positive rod owing to chemical action caused by the current. Since alternating current makes each rod alternately positive and negative, either

POTENTIAL CURRENT Telephone 001 volts Pocket Electric 1/3rdamp Torch. 3 volts. Motor Car Battery. Lights 12 volts. 10 amps. Starter Motor, 12 volts. 100 amps. Electric Lamp of 40 watts. 1/5thamp. 230 volts. Electric Fire. 230 volts, 10 amps, Floodlighting Buckingham Palace. Consumption 200 Liner's Electricity. Power Generated 7000 Kilowatts. Battersea Power Station, London. Power Generated 480,000 Kilowatts. HERETTER C. D. D. "Grid" System, Potential of 132,000 volts. House Supply, Potential of 230 volts.

OF EVERYDAY OBJECTS AND SCENES TO EXPLAIN ELECTRICAL OR PRESSURE (MEASURED IN VOLTS), CURRENT (MEASURED IN AMPÈRES), GENERATION, AND CONSUMPTION.

rod draws a dotted line (at the rate of fifty dots a second) when connected to the A.C. mains. The normal electrical supply in this country is alternating current, which ebbs and flows fifty times per second, and is supplied to houses at 230 volts. The next illustration, of a "transformer," shows why we use alternating current and not direct current, though one would naturally think of direct current set the more obvious transformer.

current, though one would naturally think of direct current as the more obvious type.

Two coils of wire, called primary and secondary, are wrapped around the same iron rod. The primary coil is connected to the alternating current mains. The secondary coil is connected to a lamp, but the coil and lamp which are held by the experimenter in the illustration do not even touch the rest of the transformer. When an alternating current flows in the primary, the lamp lights up.



It goes out when the experimenter lifts the coil off the iron rod, and lights up again as he replaces it. This is another example of the induction discovered by Faraday and described in the last article. The magnetism of the iron rod is reversed many times a second by the primary and this induces an alternating current in the secondary, as in the case of the dynamo.

as in the case of the dynamo.

As far as this is concerned we seem merely to have gained one current at the expense of another, but we have not yet mentioned the most useful property of the transformer. If the secondary has a very large number of turns of wire as compared with the primary, the current flowing in it is small, but the pressure driving it represents a very high voltage. This is called "stepping up" with a transformer. On the other hand, if the secondary has fewer turns than the primary the voltage is reduced, but a correspondingly greater current flows.

This is called "stepping down." Practically no energy is lost in a transformer. It is a handy way of turning a large current at a small voltage into a small current at a large voltage, or vice versa.

To convey a large current for a long distance is a very costly business, for it requires enormously thick cables if energy is not to be frittered away by resistance. If Battersea power-

for it requires enormously thick cables if energy is not to be frittered away by resistance. If Battersea powerstation sent out all its energy as an electric current at 230 volts such as we use in our houses, it would need copper wires many feet thick. What actually happens is as follows. The dynamos develop at 11,000 volts, which is "stepped up" to 132,000 volts by transformers and fed to the grid. At such a high voltage the current is relatively small and can be conveyed along light cables. It goes to distributing centres at a distance, where it is stepped down to 33,000 volts, then along lines to secondary distributing stations (1100 volts or so), and finally to local centres where it is turned into the 230-volt supply which is -safe to to local centres where it is turned into the 230-volt supply which is safe to have in our houses. To go back to our analogy of a Bank, we might say that the power station produces shillings which are changed to £5 notes for convenience of transport, and changed back into shillings and pennies for small cash transactions.

The mysterious enclosures which we see all over the country, containing what appear to be iron tanks and an overhead forest of cables and insulators, are these transformer stations and distributing centres where the current is tamed down to lower voltages and switched on to one line or another. We might put a notice up over each:

and switched on to one line or another. We might put a notice up over each: "Electrical small change given here."

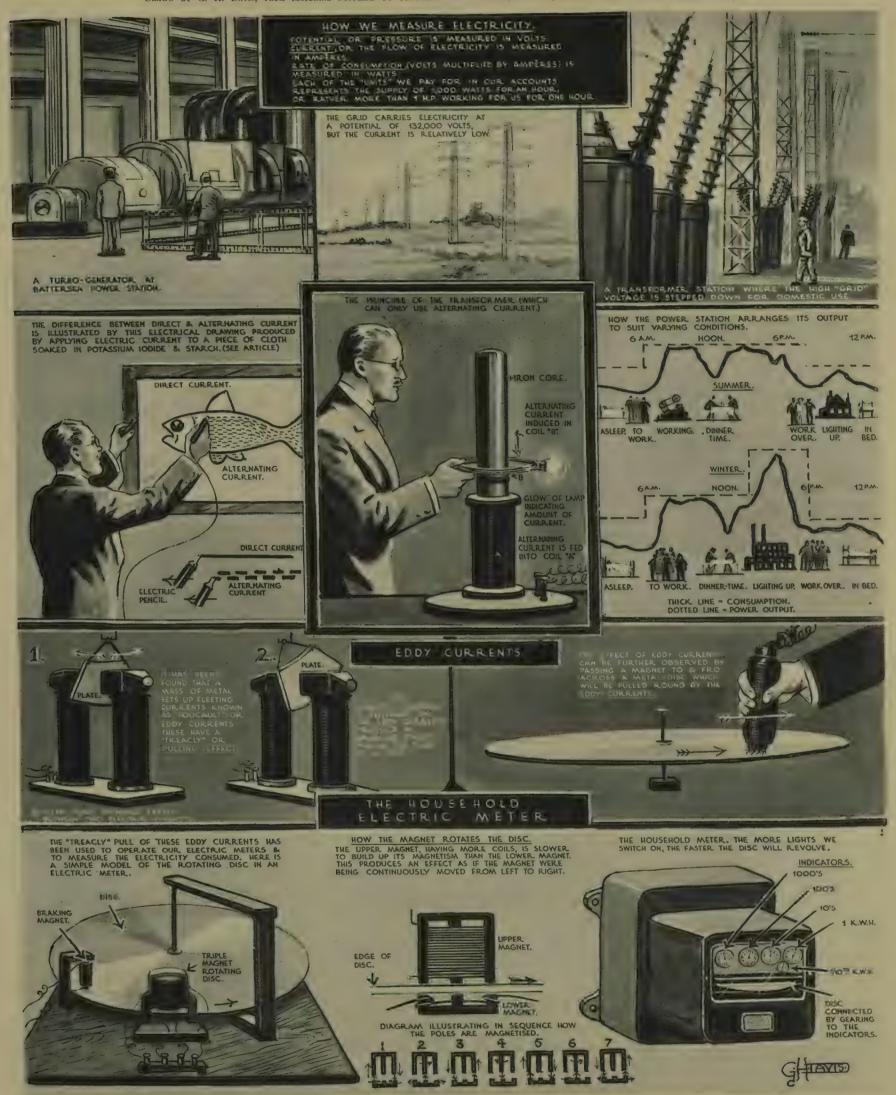
The last illustrations represent the working of the meter which measures the amount of current used in our houses, and so on. I ought in honesty to label this illustration "For advanced pupils only," because anyone who can follow the working of an electric meter can congratulate himself on having mastered the principles of electromagnetic induction. The essential principle of induction is that, if the magnetic field inside a conducting circuit changes, a current is driven round the circuit. Now, if a piece of metal is moving in a magnetic field, the field in any part of it is continually changing and electrical currents like whirlpools are therefore set up in the metal.

any part of it is continually changing and electrical currents like whirlpools are therefore set up in the metal. These are called "eddy currents."

The illustration shows a piece of copper moving between the poles of an electromagnet. If the current with magnet is off, it swings freely, but, if the current is on, energy of the swinging copper is immediately frittered away into producing eddy currents, and the copper is slowed down as if it were moving in treacle. If we hold the copper in the hand, it feels as if it were rubbing hard against something, although it is not touching the magnet. In the same way, by moving the magnet across the metal disc in the next illustration as if stroking it but without touching it, the disc can be made to revolve. Now, if you look inside your electric meter while the lights are on, you will see a disc turning round and a cyclometer counting the turns. It is being "stroked" round by a series of three little electromagnets which the current magnetises in the order 1-2-3-1-2-3. If you have followed the idea of induction, the illustration will show you how this happens.

FROM POWER STATION TO HOUSE AND FACTORY: DISTRIBUTING ELECTRICITY.

DRAWN BY G. H. DAVIS, FROM MATERIAL SUPPLIED BY PROFESSOR W. L. BRAGG, F.R.S. (SEE HIS ARTICLE ON THE OPPOSITE PAGE.)



IV. OUR ELECTRICAL SUPPLY: PROFESSOR BRAGG'S EXPERIMENTS AT HIS FOURTH LECTURE.

In the above drawings are illustrated the experiments performed by Professor Bragg during the lecture on which he has based his article given on the opposite page, dealing with the methods by which we receive our supplies of electricity. As mentioned in the introductory note to the article, it is the fourth in a series of six which have been recast from a corresponding number of lectures on electricity delivered by him at the Royal Institution. The first of the set, entitled "What is Electricity?", appeared in our issue of December 14; the second—"How Electricity Travels"—in that of December 21; and the third—"Motors and Dynamos"—in that of December 28. The remaining two articles of the series, which are to be published in later numbers, will appear respectively under the

headings of "Telegraphs and Telephones" and, lastly, Oscillating Electrical Circuits. In connection with the lecture on which the present article, here illustrated, is founded, the following summary of its scope was given by way of prefatory explanation: "The electrical current is set in motion at central power stations by vast dynamos, and distributed to houses and factories by a network of wires. In this lecture we shall see how power stations arrange for the different amounts of power needed at different times of the day, such as when the factories start up in the morning, or we all switch on our lights in the evening. We shall also see how they help each other by means of the 'Grid'; how the current is started and stopped, and how it is measured when we use it."

THE RUGGED HILLS OF SHENSI, AS FANTASTIC AS A CHINESE PAINTING: A DISTANT VIEW OF PEI FENG OR NORTH PEAK, OF HUA SHAN; WITH THE WEIHO VALLEY IN THE BACKGROUND.

THE CHINESE ARTIST'S FIDELITY TO NATURE:



ONE OF THE FIVE PEAKS OF HUA SHAN, A SACRED MOUNTAIN OF TAOISM : PEI FENG, OR THE NORTH PEAK.



A LANDSCAPE BY MI FEI IN REAL LIFE: THE PEI FENG, OR NORTH PEAK, HALF SHROUDED IN MIST-MAKING A SCENE SUCH AS THE GREAT SUNG MASTER LOVED TO PAINT.

THE BEETLING CLIFF OF THE TUNG FENG, OR EAST PEAK, CAPPED WITH PINE TREES: THE SHEER LINES BELOVED BY CHINESE LANDSCAPE PAINTERS.

Western art; but in the picture of a mist-veiled rock, as in that of a magpie on a bough, the Chinese artist was striving, by means of isolation and selection, to capture a poetle reality. On the following page, where an article by Mr. Karibeck describes his visit to the scene of these landscapes, are reproduced some of the paintings in the Exhibition for comparison. It is, of course, important to realise that, even when his fancy was at its most free, a Chinese painter worked within a set of rigid movements. As Mr. Chinese Was written is beginning in the contraction of the co of rigid conventions. As Mr. Chiang Yee writes in his delightful and interesting

SCENERY SUCH AS INSPIRED THE LANDSCAPES AT BURLINGTON HOUSE.



AMONG HILLS THAT MIGHT HAVE INSPIRED A SUNG LANDSCAPE: AN IRON INCENSE BURNER, WHERE PAPER IS BURNT DAILY TO THE GODS.



THE PEI FENG; WITH ITS MONASTERY BLENDING WITH ITS SURROUNDINGS,
AS PAYILIONS BLEND WITH MOUNTAINS IN A CHINESE PAINTING.

book, "The Chinese Eye": "We have thus conventional symbols in paint as in poetry; certain colours to indicate certain distances, certain shapes for the same puerty. Certain colours to indicate certain distances, certain snapes for the same reason, certain main movements to show certain natural reactions, certain treatment for October, for March. . They are unconsciously accepted by us through long tradition; to the Westerner they may not pass unquestioned." It is these very conventions which make it especially necessary for the Chinese artist to become aclose studies. a close student of the mountains and streams, the rocks and clouds and trees,



LOOKING NORTH FROM THE CENTRAL PEAK OF HUA SHAN : THE PINE TREES AND RUGGED MOUNTAIN OF EASTERN SHENSI-SCENERY SUCH AS ABOUNDS IN THE LANDSCAPE ART OF CHINA.



A REMARKABLE RESEMBLANCE TO CERTAIN SUNG PAINTINGS, NOTABLY OF MA YUAN: THE HSI FENG, OR WEST PEAK; WITH MIST AROUND IT AND A PINE TREE IN THE FOREGROUND.

to which by tradition he must limit his subject-matter, for "without a sure and acute and personal observation of Nature he will merely be able to reproduce a lifeless formula." In the West it has not been found that rigid conventions, if they persist for long, prove a stimulant to vital work; and the continuance through so many centuries of a vigorous school of painting in China must remain to us as one of the artistic wonders of the world. The Chinese, moreover, have shown a unique power of absorbing alien cultures into their own tradition.

If there are any who have been disappointed with the Chinese landscape paintings now exhibited at Burlington House, through finding them too fantastic and too remote from nature for their taste, they should reconsider their judgment in the light of the beautiful photographs given on these pages. They are sufficient proof that in fact the Chinese artist was, as a rule, extremely faithful to nature—or at least to such aspects of nature as he chose to paint. It is true that there was little of the materialium reproduction of detail which is true that there was little of the meticulous reproduction of detail which marks certain schools of

SUNG LANDSCAPES IN REAL LIFE:

THE RUGGED PEAKS OF HUA SHAN, A SACRED MOUNTAIN OF TAOISM.

By O. KARLBECK.

See also the Photographs on the two preceding Pages.

To a Westerner unfamiliar with the rugged mountain scenery encountered in various parts of

China, Chinese landscape paintings almost invariably appear too fantastic and unreal, and often fail to appeal to him for that very reason. Anyone who has visited such of the sacred mountains of China as Hua Shan or Huang Shan is, however, aware that mountain scenery in China can be even more fantastic than most of the landscape paintings he has studied. As he winds his way along the crags covered with quaintly shaped pine-trees, and watches the play of the clouds which now and then obscure the lower part of the mountains, he will encounter at almost every step scenes which seem strangely familiar to him. He remembers paintings he has seen and admired. Names of many an early artist will then occur to him, and he begins to wonder if this was not the very spot where this or that artist received his inspirations.

Such was, at any rate, my experience during a visit to Hua Shan, one of the five sacred mountains of Taoism. It is in the Ch'ing Ling range, in the eastern part of the province of Shensi and southeast of the southernmost bend of the Yellow River. Since the completion of the Lunghai Railway, which connects Sianfu, the capital of Shensi, with the sea, the foot of the mountain can be reached by rail either from Peking or Shanghai in about 48 hours.

The tourist leaves the train at Hua Yin, a small walled town about five miles north of Hua Shan. He then proceeds by riksha, and after a little over an hour's ride he arrives at the Garden of the Jade Spring. It is a delightful spot with spacious temple buildings where the many pilgrims and tourists who visit the mountain can find food and lodging, and it lies at the entrance of the valley where the climbing starts. Here coolies are engaged to carry luggage, which should be as light as possible, and the ascent begins.

The path, which is nothing but rough and often very steep stone steps, follows and often crosses a

stream of clear cool water. The valley is rather narrow and hemmed in by high, almost vertical, cliffs, in some of which caves may be observed, the homes of hermits. Some of these hermits are of an almost incredible age. One is still fairly active at 107, and another is said to be 125.

i, small monasteries have been

At every five Li, small monasteries have been built where food is served, and where the visitor may



'A MOUNTAIN AFTER RAIN'': A PAINTING IN INK ON PAPER BY KAO K'O-KUNG (ACTIVE 1275 A.D.—SUNG DYNASTY); CATALOGUE NO. 1091.—[Lent by the Chinese Government.]

rest his weary limbs. After a long and strenuous climb he arrives at the Cleft of the Thousand Steps.

It is a rift in the mountain-side

"WAITING TO CROSS A RIVER IN AUTUMN": A PAINTING IN COLOUR ON SILK BY CH'IU YING (ACTIVE C. 1522-1560 A.D.—MING DYNASTY);

CATALOGUE NO. 1273.—[Lent by the Chinese Government.]

only just wide enough for a man to pass. Narrow steps said to number 1000 have been cut the floor of the rift, and heavy chains fastened to the sides of the vertical walls help to make the ascent less strenuous. The chains are badly needed, as the staircase appears be almost vertical in places. After passing through a tunnel formed by huge boulders, the visitor arrives at the trapdoor of the mountain top. It is built of very stout timber and fits into a horizontal frame let into the rock. In times of trouble the door is let down, thus closing the only access to the top.

At the top of the gulley lies the Temple of the Thousand Steps, a very popular and much patronised place. After a rest there the tourist continues along the path, which now winds its way along precipices, and after a climb which has lasted some four hours arrives at the monstery of the North Peak, the lowest of the five peaks which form Hua Shan. There he will find excellent quarters with pleasant and hospitable monks. He can also board there, although the food is rather coarse.

The highest summit of the North Peak can only be reached through the monastery. It is covered with weirdly shaped pine-trees and a luxuriant undergrowth of shrubs and flowers.

The view from the top is magnificent. To the north is a vast plain traversed by the River Wei, which appears like a thread of silver. On the horizon are mountains, faintly blue in the haze of the summer day. To the east and west are rugged mountains, and to the south the East and the West Peaks of Hua Shan, a mighty truncated cone now and then hidden by clouds. This must have been a scene often pictured by ancient masters. A narrow winding ridge connects the North Peak with the main mountain, and the walk along it affords some thrilling experiences.

the walk along it affords some thrilling experiences.

The road follows a precipice, then passes through a monastery which almost seems to be hanging in the air, continues up the Sky Ladder, an almost perpendicular staircase, and reaches the Pass of the Blue Tiger. This is composed of a long, steep, and extremely narrow ridge with almost vertical sides, one of which must be at least 1000 feet deep. Steps have been cut along the top, and heavy chains fastened to short stone pillars prevent the visitor from slipping. The ascent is fairly strenuous but not too exciting, as the eyes then remain glued to the top. The descent, on the other hand, is quite a trial. The precipices on either side have a wonderful attraction, and now and then one feels an almost irresistible desire to jump down into the deep forest below. The Staircase ends in a small temple. After some further climbing the tourist arrives in an L-shaped valley, three sides of which are hemmed in by ridges known as the East, South, and West Peaks. In the valley itself there is a lesser peak known as the Central Peak.

Both the valley and the ridges are covered with a dense primeval forest which has been allowed to remain standing for the simple reason that the timber, if cut, could not possibly be brought down from the top. Stately evergreens, such as spruce, pine, and cedar, predominate, mingled with oak and lime trees. Under the trees grow tall shrubs covered with flowers, and many flowering plants delight the eye. Monasteries have been built near the tops of the peaks. The one on the South Peak is the largest. There hundreds of pilgrims can be accommodated at the same time, but the fare is very coarse and



"MURMURING PINES ON A MOUNTAIN PATH"; A PAINTING
IN INK ON SILK BY T'ANG YIN (1466-1524 A.D.—MING
DYNASTY); CATALOGUE NO. 1236.

The pictures on this page are all to be seen in the Chinese Exhibition at Burlington House. They are reproduced here for comparison with the photographs of Chinese mountain landscapes on the two preceding pages—a comparison which illustrates the Chinese artist's fidelity to nature. Precipitous cliffs, bare except for their wooded tops, are typical of Hua Shan.—[Lent by the Chinese Government.]

cannot be recommended. Just above the monastery lies the highest peak of the mountain, at an elevation of about 6200 feet. It is a small plateau bare of vegetation and with the most magnificent view in all directions.

THE CAMERA AS RECORDER: PICTORIAL NEWS FROM FAR AND NEAR.



CROWDS ATTRACTED BY THE DIONNE QUINTUPLETS: LINES OF VISITORS' CARS OUTSIDE THE STRICTLY GUARDED DAFOE HOSPITAL, CALLANDER, ONTARIO.

We reproduce here two photographs showing the amazing amount of interest taken in the Dionne quintuplets. A correspondent notes: "This summer over 200,000 people visited the Dafoe Hospital, Callander, Ontario, the home of the famous Dionne quintuplets, coming from practically every province in Canada and every state in the U.S.A. Automobiles are seen parked in front of the Dafoe Hospital; with the home of Mr. and Mrs. Dionne in the upper left-hand corner." The Dionne



WHEN THE DIONNE QUINTUPLETS ARE "AT HOME TO VISITORS": TOURISTS SURGING IN AS THE GATES OF THE HOSPITAL ENCLOSURE ARE OPENED. quintuplets were filmed recently. After their physician, Dr. A. R. Dafoe, had satisfied himself that none of his visitors was suffering from a cold or otherwise likely to pass on infection to the precious babies, the operators entered the playroom. They allowed the babies to get thoroughly familiarised with the apparatus, before starting work.

LSO a minute between them—£10,000 in all 1



WILLIAM COWPER; BY LIMUTE ABBOTT:
A LIKENESS THE POET'S DOG RECOGNISED BY WAGGING
HIS -TAIL!

Among recent acquisitions by the National Portrait Gallery is the above portrait of William Cowper by Lemuel Abbott. This was painted for a member of the poet's family; and, writing to a friend, he says that the likeness is so good that his servant boy bowed to it and the dog wagged his tail when he saw the picture!



THE VICTORIA AND ALBERT TREASURE OF THE WEEK:

THE VICTORIA AND ALBERT TREASURE OF THE WEEK:

AN INLAID CHINESE BRONZE VASE.

The art of inlaying bronze with gold and silver was probably first practised in China in the third century B.C. This vase, however, can hardly be earlier than the T'ang Dynasty (seventh to ninth century). The inlay shows what might perhaps be called Celtic influence, but the resemblance is purely accidental. The vase came from the collection of Ernest A. Brooks, of Long Island.



BEN JONSON; BY AN UNKNOWN CONTEMPORARY:
A RECENT ACQUISITION BY THE NATIONAL PORTRAIT
GALLERY.

The National Portrait Gallery has recently acquired the above portrait of Ben Jonson, a contemporary painting by an unknown hand. Though other versions of this painting are known, the Gallery's acquisition is so virile and so convincing that it is difficult not to believe that this is the original from life. That it is a fine portrait there can be no doubt.



AN ITALIAN TABLET COMMEMORATING "CRIMINAL" SANCTIONS: AN INSCRIPTION

AT THE YOUNG FASCISTS' HEADQUARTERS IN ROME.

One of the retorts to the application of sanctions which Signor Mussolini has recommended to his countrymen is the affixing of plaques commemorating this event to public buildings throughout the country. The inscription seen above reads: "The world laid siege to Italy on the 18 November, 1935. Eternal shame to those who willed, favoured, carried out the stupid crime."



INAUGURATING THE KING GEORGE JUBILEE FOREST IN PALESTINE: THE TREE GIVEN
BY THE KING AND PLANTED BY THE HIGH COMMISSIONER.

Sir Arthur Wauchope, the High Commissioner of Palestine, planted a tree presented by the King from Windsor Royal Park on a hillside at Nazareth, opposite the Jewish settlement of Nahalal, on December 19. The tree is a Cupressus orientalis. This is the first tree of the proposed King George Jubilee Forest, for which subscriptions have been raised from all British Jewry.



SCIENCE. OF WORLD THE



AND FEATHERS. WINTER "FASHIONS" IN FURS

By W. P. PYCRAFT, F.Z.S., Author of "Camouflage in Nature," "The Courtship of Animals," "Random Gleanings from Nature's Fields," etc.

T HAVE lately been having some correspondence on The theme of the winter whitening of animals. This has shown me that the last word has by no means been said on this subject. It presents, indeed, many puzzling features and some evidence of misinterpretation. Why is it, for instance, that only some birds and beasts which have to face a prolonged winter and deep snow exchange the dark dress worn during the summer and outurn for a mantle of white during

the summer and autumn for a mantle of white during the winter? Generally, we are told that this change is an "adjustment to the environment." This cannot be regarded as an all-sufficient explanation, since there are a number of animals which share the same conditions of life yet which make no change at all, as, for example, in the case of the musk-ox and the reindeer; while others, like the Polar bear and the Greenland falcon, wear a white dress the con, wear a white dress the year round.

May we not suppose that this white dress began to come into being long ages ago as a physiological reaction to cold, which inhibited the formation of pigment in the hairs or feathers which were developing at the time of the autumn moult, and thus resulting in a white dress which, incidentally rather than primarily, became forthwith a "concealing coloration," enabling the Arctic fox to steal unawares

Arctic fox to steal unawares on its prey, ptarmigan and mountain - hares, and its victims to escape the fox?

This sounds almost like an absurdity. But there are many cases of this type where there is no white dress. For a concealing coloration in a carnivore enables it to steal unawares 0.1 his intended victims when the wind carries his seent away from them; and it protects the victims when their aggressor has no seent to guide him.

Let it be granted that a white pelage or a white plumage came into being first as a result of the inhibition of pigment by low temperature, this change inhibition of pigment by low temperature, this change would, in course of time, become a heritable one. This being so, then the change is to be attributed to temperature, and not to "environment" which is formed by the snow. There is evidence in favour of this interpretation, since ptarmigan in mild winters retain some of the autumn plumage, but this seems to be the case only with the cock-birds, as if they were slightly more resistant to this temperature change.

The willow-grouse, like the ptarmigan, turns white

The willow-grouse, like the ptarmigan, turns white in winter. But in the extreme northern limits of the species, the cocks appear to fail to develop the summer dress, save only the head and neck, while in the rest of the plumage no more than a few feathers here and there are found interspersed among the white. But both sexes have a com-plete autumn dress. The female, however is commonly found having this autumn plumage interspersed with faded feathers the summer dress. These differences in regard to the plumage changes of the ptarmigan and willow-grouse are interesting, and demand further con-

sideration.
This sensitiveness to temperature presents

some puzzling features in the case of the stoat. On the some puzzling features in the case of the stoat. On the summit of Ben Nevis this animal wears a white coat the year round. All turn white in the more northerly parts of Scotland. In northern England, white stoats occur with some frequency, but in a considerable number the change is only partial. But we have to find an explanation for the fact that, though in southern England white stoats are rare, specimens have been obtained here even in early autumn, which been obtained here, even in early autumn, which



I. THE STOAT AS IT APPEARS IN ITS SUMMER COAT;
PALE CHESTNUT-COLOURED ABOVE AND WHITE BELOW, WITH

A BLACK TIP TO THE TAIL.

The fur known as ermine is that of the stoat in winter. The black tail-tip is always used with this, as may be seen, for example, in royal robes. In its summer dress the stoat is sometimes confused with the weasel and even the polecat. The polecat is a much larger animal and much darker in coloration, while the weasel is much smaller and has no black tip to its tail.

Figs. 1 and 2 reproduced from Thorburn's "British Mammals"; by Permission of the Publishers, Messrs. Longmans, Green and Co.

are partially white. Are these descendants of ancestors bred in the north? Its near relation, the the north? Its near relation, the weasel, turns white only in the far north of its range. In the British Islands no change takes place.

The mountain-hare, which is circumpolar in its range, is a

native of the Highlands of Scotnative of the Highlands of Scot-land, venturing further south in extremely cold weather, turns white in winter. Its cousin, the Irish mountain-hare, is but a sub-species, and it rarely turns white. And the same is true of the Scotch hares which have been introduced, from time to time, into England. Hence we must into England. Hence we must

assume that the winters of England and Ireland seldom sufficiently cold to induce a change. There are Arctic animals which wear a white livery

the year round. These are the Polar bear, the snowy owl, and the Greenland falcon. Save the Polar bear, no others of the bear tribe are ever white. But no others live so far north. It may be that the white coat was gradually acquired as its ancestors ranged further and further north. But be this as it may, as in the case of the stoat and the Arctic fox, which wears a white coat only in winter, this white fur serves as an admirable "concealing coloration" when stalking prey. The Polar bear lives largely on seals, which are caught by laying up beside the breathing-holes of its victims made in the ice. If the hunter wore a dark coat, it would be seen by its victim the moment it approached the surface and promptly warned. The Arctic fox, in like manner, is enabled to creep up unawares on Arctic hares, willow-grouse, and ptarmigan. The same is true of the snowy owl and the Greenland falcon.

As touching the white Rocky Mountain goat, interpretation is difficult, for though this animal lives around the snow-line, it occasionally descends lives around the snow-line, it occasionally descends to feeding-grounds where there is no snow, and hence is conspicuous. In the interpretation of the way in which these changes are brought about, we must, so to speak, walk delicately. Opinions are divided. Some hold that the pigment, as between a dark summer or autumn dress and a white winter dress, is absorbed; others that the white dress is an entirely new dress. And I venture to say that those who take the latter view are unquestionably right



THE STOAT IN ITS WINTER COAT; BEARING THE WHITE FUR WITH BLACK-TIPPED TAIL WHICH IS KNOWN TO FURRIERS AS ERMINE.

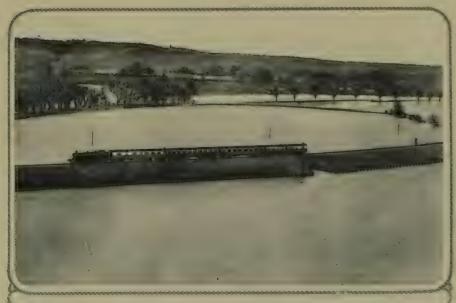
3. THE PTARMIGAN IN WINTER AND IN AUTUMN DRESS (LEFT); SHOWING THE WHITE COLORATION WHICH RENDERS THE BIRD PRACTICALLY INVISIBLE TO ITS ENEMIES WHEN CROUCHING ON THE SNOW, PROVIDED THAT IT REMAINS CROUCHING.—(Reproduced from Hudson's "British Birds"; by Permission of the Publishers, Messrs Longmans, Green and Co.)

Many attempts have been made to "prove" that the pigment either of fur or feathers can not only be absorbed, but can also be shifted about to assume new patterns. The late Dr. Bowdler Sharpe made a valiant attempt many years ago to prove this in the case of the Greenland falcon and the sparrow-hawk. He was convinced that the longitudinal stripes of the juvenile plumage were transferred and rearrranged to form the transverse stripes of the adult. In the Greenland falcon he believed that these transverse stripes could be further reduced, in parts of the feathers, to the vanishing-point. The late Professor Metchnikoff believed that pigment absorption was brought about by means of "phagocytes," which invaded the feather and consumed the pigment. I had no little difficulty in convincing him that this was impossible.

in convincing him that this was impossible.

Examination of a dissected feather and the aid of a microscope will suffice to disprove any such supposed changes. For the pattern formed is not of a homogeneous mass of pigment, but of innumerable and minute corpuscles of pigment completely isolated within the separate barbs which form the web or vane of the feather. They form the pattern we see only because the pigment is arranged in these barbs so that it is deposited in each at the same level, thus forming to the naked eye a homogeneous mass. Any movement of pigment from the spot in which it was movement of pigment from the spot in which it was originally deposited is impossible. Why this should be so I have now no space in which to explain.

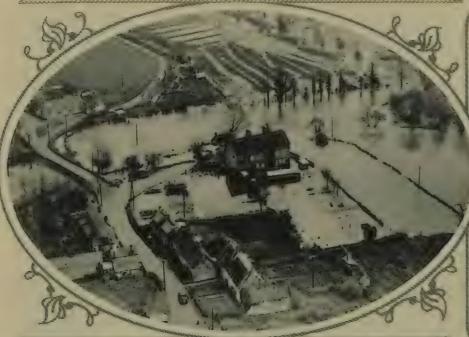
FLOOD-MADE "LAKE DISTRICTS" IN ENGLAND: SCENES TYPICAL OF MANY OTHER LOCALITIES.



THE THAMES VALLEY, WHERE THE RIVER OVERFLOWED ITS BANKS IN MANY PLACES: A TRAIN TRAVERSING A FLOODED AREA NEAR COOKHAM.



IN SUSSEX: A MOTOR-CAR SPLASHING ITS WAY ALONG THROUGH FLOODS AT PULBOROUGH, ON THE ROAD BETWEEN BOGNOR REGIS AND WORTHING.



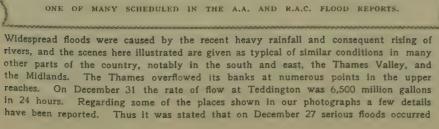
WILTSHIRE: HOUSES IN THE LOWER PART OF TISBURY ISLANDED AMID FLOODS CAUSED BY THE OVERFLOWING OF THE RIVER NADDER.



ON THE UPPER REACHES OF THE THAMES: A FLOODED DISTRICT AT WARGRAVE, BERKSHIRE-A REMARKABLE PHOTOGRAPH TAKEN FROM AN AEROPLANE.



IN HAMPSHIRE: CONDITIONS ON THE ROAD BETWEEN ROMSEY AND ANDOVER, ONE OF MANY SCHEDULED IN THE A.A. AND R.A.C. FLOOD REPORTS.





IN KENT, WHERE A NUMBER OF LOW-LYING DISTRICTS WERE SERIOUSLY AFFECTED: MOTORING ON A FLOODED ROAD NEAR THE VILLAGE OF YALDING.

in the Tisbury district, when the river Nadder overflowed its banks. Houses in the low-lying part were flooded to a depth of 1 to 3 ft., and motorists were stranded. Two children riding ponies, which took fright, were swept into the water but were rescued. Among a large number of roads scheduled as flooded in reports issued by the Automobile Association and the Royal Automobile Club were those between London and Bognor Regis, especially at Pulborough Causeway, the Romsey-Andover road in Hampshire, and several by-roads near Yalding, in Kent.

A SILHOUETTE OF THE DUCHESSE D'ANGOULÊME, HENRI V.'S AUNT AND THE DAUGHTER OF LOUIS XVI. AND MARIE ANTOINETTE. SHE BROUGHT UP HENRI V. AFTER 1832, WHEN HIS MOTHER REMARRIED.

HENRI V., LAST KING OF FRANCE: THE LIBRARY OF "L'ENFANT DU MIRACLE" IN LONDON.



A DRAWING OF HENRI V. AND HIS SISTER LOUISE DE FRANCE, AS CHILDREN, PLAYING ON THE TERRACE OF THE PALACE AT ST. CLOUD. BY LOYAL FRANCE THE BOY WAS CALLED HENRI-DIEUDONNÉ, OR L'ENFANT DU MIRACLE.



A SOIRÉE WITH THE FRENCH ROYAL FAMILY IN EXILE AT GORIZIA: A WATER-COLOUR DONE IN 1842 BY LOUISE DE FRANCE, THE SISTER OF HENRI V.

AND DAUGHTER OF THE DUC DE BERRY.



THE FRENCH ROYAL FAMILY IN EXILE—FROM THE FAMILY ALBUMS NOW ON EXHIBITION IN LONDON: ANOTHER WATER-COLOUR DONE IN 1842 BY LOUISE DE FRANCE, HENRI V.'S SISTER.



FINE BINDINGS FROM THE LIBRARY OF HENRI V.: VOLUMES STAMPED WITH THE LILIES OF FRANCE, THE EMBLEM OF A KING WHO NEVER REIGNED AND DIED WITHOUT ISSUE.

Professor Tancred Borenius, Professor of the History of Art at University College, London, kindly furnishes us with the following note: "One of the most dramatic episodes in the history of the French Restoration relates to the birth of King Charles X.'s grandson, Henri, Duc de Bordeaux, later known as the Comte de Chambord. His father, the Duc de Berry, was murdered by a fanatic in 1820, before his wife had borne that male child to which France looked to continue the elder line of the House of Bourbon. Yet the scheme of the murderer failed in its main purpose; for in September 1820 the widowed Duchesse de Berry gave birth to that posthumous child, Henri-Dieudonné, who was greeted by loyal France as "enfand du mirade." When, ten years later, the July Revolution ensued, it was in favour of that child that Charles X. abdicated; and, though the contract so implied was not carried out, the great majority of monarchist France continued to regard the Comte de Chambord as the rightful King; and once or twice—notably after the disastrous war of 1870-71—his restoration came within an ace of accomplishment. From 1839 until his death, without issue, in 1883, the Comte de Chambord lived in the château of Frohsdorf in Austria; and there gradually accumulated a collection of books and pamphlets which is of enormous interest in illuminating nineteenth-century French history; while an equal interest attaches to the Frohsdorf collection of portraits, autographs, and personal souvenirs. It is this unique assemblage which Messrs, Maggs, the well-known booksellers, have lately in great part acquired; it is at present on exhibition at 34-35, Conduit Street, and this selection of items gives some idea of the collection's incomparable charm of historical association."



HENRI V. IN LATER LIFE: THE "COMTE DE CHAMBORD," WHO DIED IN 1883.



A BAS-RELIEF IN MARBLE OF HENRI V.: A PORTRAIT DONE AT ROME BY FAUVEAU IN 1840, WHEN THE SITTER WAS TWENTY YEARS OLD.

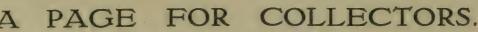
What does the syphon say?



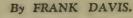
THE clockmaker is, or should be, first and foremost THE clockmaker is, or should be, first and foremost a scientist: his business is to produce an instrument which will tell the time with accuracy; sometimes his eye is of such a kind, and his natural taste so good, that he gives the world at one and the same operation a practical timekeeper and a minor work of art. In this category I venture to suggest should be placed the striking and alarm calendar-clock illustrated here.

The maker was Edward East (see Fig. 1—" Eduardus East, London"), who was one of the ten original assistants named in the charter of incorporation of the Clockmakers' Company (1641), and who served as Master in 1645 and 1652.

named in the charter of incorporation of the Clockmakers'
Company (1631), and who served as Master in 1645 and 1652.
He was Clockmaker to Charles I., and had his place of business first in Pall Mall and then in Fleet Street. Most of his work seems to have been done for the Court, and watches by him were often presented as prizes. A large silver alarm watch from his workshop was in the possession of Charles I. on the day of his



A CLOCK BY EDWARD EAST, CLOCKMAKER TO CHARLES I.



(4) an equation of time table; (5) on the outer circle the months again, divided into three hundred and sixtyparts.

The dial has four hands — the date hand, alarm hand, minute hand, and hour hand. The hours are marked by Roman numerals in black; the minutes by black marks on the outer rim with every five shown in red Arabic numerals. The days of the month are indicated by dots on the inner rim, every third day being shown



I. THE INTERIOR OF AN EDWARD EAST CLOCK-WATCH: THE BELL OF THE ALARUM (LEFT); AND BEAUTIFULLY CUT ELEMENTS OF THE MECHANISM, INCLUDING A PLATE, MARKED I TO 4, FOR REGULATING THE LENGTH OF THE SPRING.

by black Arabic numerals. The centre is covered by a brass plate engraved with a floral design, and through this passes the centre abor this passes the centre abor squared for carrying the minute hands within a pipe on which the hour hand is friction - tight, outside this the pipe carrying the alarm hand, and, lastly, the pipe carrying the date hand.

The following technical note, for which I have to thank Mr. F. J. Seal, F.R.Horol.Soc., will interest serious collectors.

"Escapement. A verge of unusual construction controlled by a three-arm uncut

of unusual construction controlled by a three-arm uncut steel balance and a five-coil steel spring (a later addition, probably) colleted below the balance, covered by a pierced and chased cock, the pallet arbor carrying a pinion in mesh with a contrate wheel of which one end of the arbor passes through the plate and carries a gold second hand moving anti-clockwise round a silver ring marked 15, 30, 45 and 60 in red figures with lines indicating seconds. The balance spring is pinned to a block on the plate and passes through a slot attached to a toothed wheel in mesh with a pinion carried by a

square and plate marked r to 4 for regulating the length of the spring (see Fig. 1)." Mr. Seal adds: "The lower half of the case contains a large silvered bell of clear tone and a solid pineapple-shaped block through which passes the bow, a heavy brass ring. The upper half of the case is hinged at the top and is secured to the lower half by an iron hook passing through a brass boss."

So much for the mere mechanics of this piece. Those who like myself, are profoundly ignorant of the watches.

So much for the mere mechanics of this piece. Those who, like myself, are profoundly ignorant of the watchmaker's craft as such, are invited to consider the way in which the maker, having solved his purely technical problem, has embelished his work with a restrained opulence very much to the taste of his time, and not less to ours.

I imagine that many people must be like myself, hopeless duffers at understanding just why wheels go round, but none the less fascinated by any piece of mechanism. I confess that almost every watch is to me a minor miracle—but when, as in this instance, little wheels are so finely engraved and the whole contraption put together with such ingenious artistry, one is tempted to rank clockmakers with poets and painters. (Indeed, the cynic will say, "Rank'em higher, my dear Sir. Rank'em higher—they're far more reliable!")

Compared to other things from his hand, this watch

"Rank 'em higher, my dear Sir. Rank 'em higher—they 're far more reliable!")

Compared to other things from his hand, this watch is comparatively sober and workaday. There is, for example, in the Ashmolean Museum at Oxford a watch in a gold case in the form of a melon studded all over with turquoises. Other fine examples are to be seen at South Kensington, the British Museum, and the Guildhall Museum. The career of East himself seems so far to have eluded investigators. He was certainly actively engaged in the business when the Clockmakers' Company was founded, and could hardly have been less than twenty-one at this time (1631). He was therefore born not later than 1610, and possibly ten years earlier. A clockmaker named Edward East died in 1693, and

named Edward East died in 1693, and Britten suggests that this was a second man of the same name. This theory, I under-stand, holds the field at stand, holds the field at present. Failing direct evidence I see no reason to deny to our East the gift of longevity. The point is not important, but is worth clearing up. Perhaps some reader of this page who has access to out-of-the-way records will be able to supply definite proof one way or the other? I often ask for the co-operation of readers of The Illustrated London News in dealing with obscure trated London News in dealing with obscure points which arise in the course of these articles: here is yet another occasion when it is possible a missing fact may be dragged from obscurity

from obscurity.



2. A NOTABLE MASTERPIECE OF ENGLISH SEVENICENTH-CENTURY CLOCKMANING:
A CLOCK-WATCH AND ALARUM (SEEN FROM THE SIDE) BY EDWARD EAST, CLOCK-MAKER TO CHARLES I.; AND THE CASE, WHICH IS IN TOOLED HORSE-SKIN.

This watch, which is in brass and silver, dates from about 1640. Its dimensions are: diameter, 5 in.; diameter of dial, 3\(\frac{1}{2}\) in.; thickness, 2\(\frac{1}{2}\) in.; while the case measures
6\(\frac{1}{2}\) in. including the bow.

Reproductions by Courtesy of Mr. F. H. Green

execution, and was given by the King to Mr. (afterwards Sir) Thomas Herbert. This watch, I understand, has been traced, though for a wild moment the owner of the one I illustrate, so he tells me, thought he might be able to identify his

be able to identify his with it. Investigation, however, proved that the King's watch has one hand only, and is considerably smaller.

However, any fine watch by so notable a maker as East is some thing to stir the blood of all good clockmen, of all good clockmen, so I make no apology for describing it in considerable detail. Date presumably about 1640. Diameter, 5 in. Weight, 3 lb. 14 oz. without the leather case, and without bezel and glass, which are missing. The outer case is of horse-skin, beautifully tooled: then comes the case proper of gilded brass, pierced of gilded brass, pierced and chased in a floral design, The back (Fig. 4), starting from the centre outwards, is engraved with (1) the signs of the Zodiac; (2) their pictorial forms; (3) the months;



THE FACE OF THE EDWARD EAST CLOCK-WATCH AND ALARUM; SHOWING THE CASE WITH PIERCED SIDES TO EMIT THE SOUND OF THE BELL; THE HOUR AND MINUTE HANDS, AND THE CALENDAR AND ALARUM POINTERS.



BACK OF THE EDWARD EAST CLOCK - WATCH : ENGRAVED DESIGNS OF GREAT INTRICACY AND DELICACY, INCLUDING THE SIGNS AND SYMBOLS OF THE ZODIAC, THE MONTHS, AND A CALENDAR AND EQUATION OF TIME.



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skating competition (February 17th to 19th)
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Kitzbuehel (Tyrol): International ski-jumping (February 25th) Lech on the Arlberg (Vorarlberg): Madloch downhill races (Feb. 29th) St. Anton am Arlberg (Tyrol): KANDAHAR Races—Ski and slalom (March 14th and 15th)

St. Christoph on the Arlberg (Tyrol): May ski-races (May 3rd) Heiligenblut (Carinthia): International Glockner ski-races (May 31st)

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WAGES, PRICES, AND CONSUMERS.

IT has been pleasant to observe how cheerfully most people have accepted the proposal for an increase in the miners' wages, to be paid for out of an increase in the price of coal. The

cost of coal is, in these times, a serious item in the domestic budget; and those of us who are old enough to remember how much cheaper it was in pre-war times are often inclined to marvel at the patience with which the ordinary consumer submits to the enormous difference between the price at the pit-mouth and the price at which the coal is, in these days, delivered into his cellar. Of course, there are plenty

of explanations of this difference-higher cost of transport, higher rates and taxes; higher wages of those engaged in distribution, and so on. But it seems strange that public opinion should not opinion long ago have insisted on finding out whether economies could not have been effected, whereby some offset could have been provided for all these drains on the purses consumers. the British consumer is almost as patient as the British taxpayer, and has con-tinued to suffer in silence, or with a mere muffled obbligato of muttered growls about something wrong with the system"; though it is possible his discontent that may have had something to do with the growth, such as it has been, in the strength

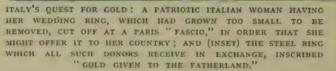
of Socialist opinion. But, whatever the consumer may have been thinking about the inordinate cost of intermediate services between him and the mines, he has shown, as far as my experience goes, no inclina-tion to quarrel with a further rise in the price of his coal, as long as he can be sure that the extra price that he gives will mean a rise in the wages of the men who dig out the coal. Herein his sentimental sympathy has led him to a sound business conclusion; for there can be no doubt that it is a good thing for business all round if every industry can be induced to pay the highest wages that it can stand to those who do its manual work.

IS DEARER COAL NECESSARY?

Nevertheless, there are obvious objections to this method of securing higher wages at the expense of the consumer. Even in the case of the ordinary citizen who sees his coal-bill raised, the inevitable result is that the extra amount that he has to pay for warming his house and cooking his meals (if he uses coal for this purpose) reduces his power to spend on other objects. What the miners will have gained will mean less purchasing power available to take off the output of other industries; or possibly a smaller amount to be put into the pool of saving which maintains the national capital. And even more serious is the effect on all the great industries of the country, which use coal as part of the raw material of manu-

When the cost of coal is raised for the iron and steel trade, engineering, ship-building, railways, electrical works, gas works, and all the rest of them, either they will have to charge more for the articles and services that they sell—which they will not be able to do if they are selling abroad—or the margin will be reduced out of which they pay wages and holders. If this is the only way in which higher wages can be secured for the miners, public opinion is quite ready to face the sacrifice involved; but it would obviously be much pleasanter for all parties if some other way round the difficulty could be found, through better organisation of the industry, better marketing systems, or any device that can be suggested for giving the coal-owners a better margin out of which to pay wages without raising the price of coal. For we must not forget that our industrial prosperity has been largely built up on cheap coal, and that there are already more than enough difficulties in the way of those who are trying to maintain the activity of our domestic and foreign trade, without adding dearer coal to the list.

ILLA PATRIA-T



salaries to their staffs and dividends to their share-

device of providing higher wages by increased prices might be expedient for the purpose of warding off an injurious strike, the time had come when the real issue must be faced, and that the real issue was "nothing more or less than the efficient management

industry, from the beginning to the end of it." He pointed out that under the Coal Mines Act of 1930 a reorganisation commission was appointed, one of the main functions of which was to bring about mergers of various colliery interests, designed to ensure increased operating efficiency; that very little had been done to any purpose in this direction; and that, until sound financial mergers were carried through and the number of colliery undertakings reduced, little could be done to secure efficiency; and by efficiency, he did not mean merely improvement in the operation of the collieries, but in the selling of the coal and in everything connected with the business. His scheme involved control of the industry by the industry itself, through a trust or holding company, with as many subsidiary companies as are necessary to suit the requirements of the industry as a whole, and of the various districts in which it operates. These subsidiary companies, control-ling numerous undertakings by actual ownership of their assets, could not, in Mr. Frater Taylor's opinion, fail to "apply the principles of good management and close down the less efficient pits." They would also be able to modernise others that needed it and equip them with the most up-to-date mechanical appliances. Reduction in costs would necessarily

follow, from lower "overhead" charges if from no other source; and real control sales and prices would at possible by means of this centralised organisation

AN OVERDUE REFORM.

There are, of course, difficulties

and objections to be faced. Public opinion has reason to be suspicious of any approach to monopoly, knowing that its possession inevitably tempts those who wield it to charge the highest possible price for the article that they sell. And financial mergers and holding companies give opportunities for mani-pulated profits and misleading balance sheets. Rationalization has lately been rather under a cloud, owing perhaps to its failures in Germany, where it had been carried out on too extensive a scale. When we consider the immense importance of the efficiency of the coalmining industry to everyone in the country, and the constant apprehensions inflicted on business by the dissatis-faction of those who work in it, it seems really amazing that its organisers should still be open to the charge of inefficiency, so great that its cure may be expected to make higher wages possible, without any increase in prices. In this case, as in so many others, the inertia and resistance of a recalcitrant minority have probably accounted for the delay in reforms which ought long ago to have been carried out. As for the Act of 1930, its chief effect seems to have been in the direction of increased overhead charges inflicted on the industry, owing to questions of adequate standard tonnage and quotas, the cost of arbitrations and legal expenses

and all the attention that has had to be given to these matters by officials who might have been better employed. If we are to suffer through a higher price of coal, let us at least hope that the crisis which has produced this necessity will lead to measures of reform that will bring the price down again and at the same time give a better chance of life to the miners, and take care of those who are displaced.



SIGNOR MUSSOLINI TAKES A PERSONAL PART IN THE QUEST FOR PRECIOUS METAL: IL DUCE RECEIVING THE OFFERINGS OF A DISTRICT BROUGHT TO HIM IN A STEEL HELMET BY A WAR WIDOW, WHILE HE WAS AT PONTINIA TO OPEN THE NEW TOWNSHIP.

In view of Italy's serious shortage of gold, every Italian is told that it is a sacred duty to offer this metal to the Fatherland—by taking it to the local Fascist group or lending it to the State through the Bank of Italy at 5 per cent. Women give their wedding rings—the example being set by Queen Elena. Gifts of gold were also handed to Signor Mussolini at Pontinia, being brought to him by war widows, each bearing in a steel helmet the offerings of a village or township. Italians living outside Italy have also contributed their jewellery.

"RATIONALIZATION" TO THE RESCUE

That such a way round the difficulty is possible was the burden of a letter lately published by *The Times* from Mr. Frater Taylor, who wrote in his "personal capacity," but with all the authority of the chairman of Pease and Partners, Ltd., a great industrial undertaking. He suggested that, though the

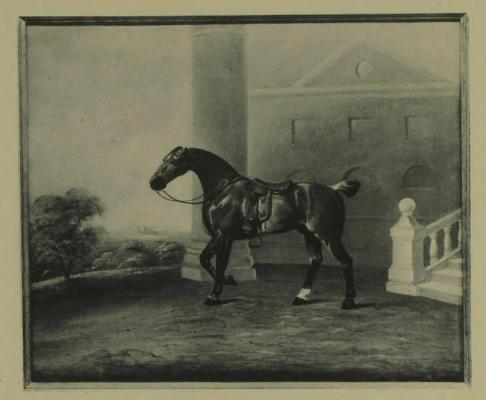


In the "Sporting Magazine" of November 1802, the engraving of this interesting picture is reproduced, and on page 56 appears the following Editorial:-

"This celebrated hack, of which a portrait is here given, was, as we have been informed, once the property of Lord Egmount, afterwards of Mr. Tattersall, and now of the Prince of Wales; of his excellence as a hack we shall not make any long enumeration. The Prince, who constantly rides him, once trotted him 6 miles in 21 minutes and a half. He is so valuable a horse for his use as a hack that when Mr. Tattersall sold him to the Prince, it was on the special condition that if his Royal Highness was at any future period inclined to part with him, Mr. Tattersall was to have him again.

"With respect to the original painting and the

"With respect to the original painting, and the engraving, we shall say little, Mr. Marshall's talents are so well known, and his fame so fairly established that he needs no encomiums from us; and, in regard to Mr. Scott, his late engravings for Mr. Daniel's Rural Sports have so completely stamped him an artist of the first order that our praise would be nothing worth to him."



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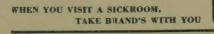
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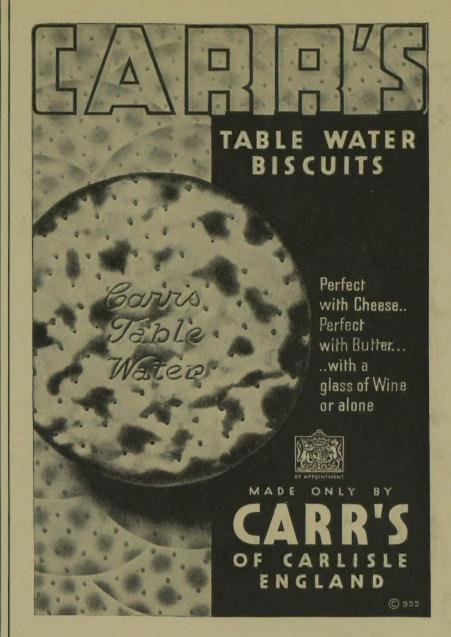


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